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INTRODUCTION.

Foreword

These rules are primarily intended to cover riverine and coastal warfare during the War Between the States, more often called the American Civil War.

When we originally became interested in the naval side of the War Between the States we found that, while there were several good figure suppliers, there were no sets of rules that suited our purpose. They were either too simplistic, too complex, or simply too inaccurate in their results. Because of this, we set out to write our own.

When writing these rules, we had several factors in mind. These were:

Playability. The game had to be enjoyable and not too complex, with rules that were easy to understand and remember.

Authenticity. Without sacrificing playability, the rules should attempt to give historical outcomes to historical situations. The rules should favour historical tactics, encouraging players to act historically.

Flavour. The rules should give a flavour of the period. Players should feel that they are controlling ships, not moving counters on a board.

One difficulty with the War Between the States is the lack of reliable information about the vessels involved. This is particularly bad where the Confederates are concerned. We have tried to be as accurate as possible when defining vessels, but information is not always available. Speed is a particular problem as many sources quote the theoretical speed, not the actual speed in action. We have erred on the side of caution and taken the lower speed when quoted.

Rate of fire for guns has been simplified, with all guns firing once per turn. Players who wish to use a more realistic system may use the optional rules for rate of fire.

Scales

1mm represents 2 feet

5cm represents 1 knot of speed

1 Turn represents 1 minute

If you have any questions about the rules, have information that you feel is more accurate than that which we used or you wish to receive any updates, or details of additional products, please send a ssae (or 2 IRC if outside UK) to the address below, or contact us via e-mail.

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There is also a Website with ship details, painting tips etc. at **<http://www.acwnaval.com>**

Finally we would like to thank all those who helped with the development of these rules, particularly the Cornwall Wargames Association, the Alder Valley Gamers Society, John "Trollkin" Gathercole, Alan Fuoco, Rod Langton, Danny O'Hara, David Niblock and, most of all, my (Jason's) wife Vickie, for both proof reading and putting up with him for the time it took to finish them.

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Background

The American Civil War was a turning point in naval warfare. It marked the end of the wooden vessel as an effective fighting ship and introduced many innovations that were to dominate naval doctrine for many years.

Before the war wooden, broadside armed ships were the predominant weapon of naval warfare, with only a few countries possessing iron ships, notably Britain and France. Even these vessels were ironclad variants of the wooden ships of the line.

At Hampton roads, when the *Virginia* attacked the wooden vessels anchored there, she sank two and severely damaged a third, without suffering any significant damage herself, showing that wooden vessels could not stand up to iron. It was only the arrival of the *Monitor*, another ironclad, that stopped the *Virginia* destroying the rest of the squadron.

Other innovative and important weapons were introduced during the war. These included;

- The mine, then referred to as the torpedo.
- The turret, used for the first time in action by the *Monitor*.
- The submarine. Although used before, the *Hunley* was the first submarine to successfully sink an enemy vessel.

The war also saw the return of one of the oldest naval weapons, the ram. Because gun technology lagged behind that of armour, ironclad vessels often had difficulty inflicting any significant damage upon one another, and so ramming was resorted to, often with great success.

The naval war was, in many ways, extremely one-sided. The Union had ten-times as many ships and men as the Confederacy and, on the whole, its vessels were better. To counter this, the Confederacy used a mixture of ingenuity and sheer audacity, which, whilst ultimately unsuccessful, brought some notable victories.

As with many wars, the naval action was decisive in the overall outcome of the war. The Union control of the Mississippi river and the naval blockade of the coast eventually brought about the defeat of the Confederacy.

Several aspects make the civil war particularly interesting from the naval wargamer's point of view.

Most of the actions involved very few vessels, allowing the majority of the battles to be fought using large scale models at minimal cost.

There were an enormous variety of vessels used, in a great variety of sizes; from the 18-gun *New-Ironsides* to the diminutive *David* torpedo boat.

The vessels involved are easy to paint and an impressive looking fleet can be produced quickly and easily.

For those interested in the history of the war, there is a bibliography at the back of these rules.

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Equipment Required

A playing area. This may be covered in terrain blocks or a cloth of either blue or brown colour (the rivers of the southern states vary widely in colour throughout the year).

If the action is taking place on a river, a second piece of cloth or similar material may be used to indicate the deep channel in the centre of the river. This should be of a different (preferably darker) shade of the colour used for the main area.

A number of six sided (d6) and ten sided (d10) dice.

Models of the vessels.

Data sheets for the vessels. Examples are included at the back of these rules.

Scenery (sandbars, islands, river banks, shore forts etc.).

Turning template (photocopy the template given at the back of these rules, glue it to stiff card and cut it out).

Speed Counters (photocopy the sheet given at the back of the rules, glue it to stiff card and cut out the counters).

Fire Test Counters (You may use red counters, or, as we do, small pieces of grey or white cotton wool).

On Fire Markers. Two sizes should be used. The first about one inch in diameter, for 'on fire', and the second about two inches in diameter for 'burning out of control' (We use dark grey cotton wool, sold in pet shops as animal bedding, but dyed cotton wool will do).

A calculator is useful for ship design, but not required for play.

Dice Rolling Conventions

Most tests in these rules require a roll to be made against a base chance to which several modifiers may apply. These should be added or subtracted to give the modified base chance before the test is made. To carry out the test a d10 is rolled and if the result is equal to or less than the modified base chance then the test succeeds.

Unless otherwise specified, a roll of 1 is automatically a success and a roll of 10 automatically a failure.

Other rolls may require one or two d6 to be rolled and various modifiers to be applied to give a final result.

Some tests require a d3 to be rolled. This entails rolling a d6 and halving the result, rounding up (e.g. a 5 becomes a 3 and a 4 becomes a 2).

Basing Models

Models should be attached to rectangular bases to protect them, measure firing arcs and to make movement easier. Bases should be approximately 10mm longer and wider than the model overall, giving a gap of 5mm either side and end of the model.

Marks should be made on the base at points $\frac{1}{4}$, $\frac{1}{2}$ and $\frac{3}{4}$ along the sides and at the mid point on the front and rear, as shown in Figure 1. These points are used for measuring firing arcs and target aspect.

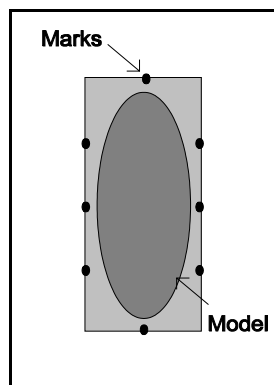


Figure 1

Order of Play

Setting up**Fleets**

The players should select their fleets by an agreed method, options include a pre-arranged scenario or the result of an ongoing campaign.

Ship record sheets should be prepared for all the vessels involved (a blank sheet is given at the back of these rules).

Terrain

This is best simulated by a cloth of the appropriate colour (i.e.. Blue, brown or similar), upon this may be placed islands, mud and sand banks (sculpted or card) and the banks of the river (unless the action takes place on the open sea). Shallow water should also be marked, this is best done using a different colour or shade of cloth or card. Any forts, gun batteries or other fixed items are placed on at this point.

As most actions of the civil war took place on rivers, the game is usually played lengthways on the table, with players starting on opposite short sides.

Unless defined by a scenario, players should dice randomly for which side of the table they begin from.

Deployment

Players may deploy their vessels up to 30cm in from their edge of the table unless specified otherwise in a scenario.

Players should roll a die and the highest roll deploys one of his vessels first. The other player then deploys one of his vessels and this continues, until all vessels are deployed on the table.

The game now begins with the first turn and continues until one player achieves the victory conditions, which should be specified by agreement at the start of the game.

The Game Turn

All actions in a phase are simultaneous

Each turn is divided into phases with different actions being carried out in each. The phases are carried out in the order shown on Table 1.

Table 1. Order of Play	
1	Orders Phase
2	Movement Phase
3	Gunnery Phase
4	Boarding Phase
5	Morale Phase
6	Fire Test Phase
7	Repair Phase

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Orders Phase

At the beginning of each turn, the players should write orders for each of their vessels. These should be written in the orders section provided on the ship record sheet.

The following orders should be written each turn:

Movement

The vessel's speed for this turn should be put in the column marked **Speed**.

How the movement is divided into turn and straight is put in the column marked **Manoeuvre**.

Tactical Orders

Orders such as boarding, attempting to run aground, anchoring and scuttling the vessel should be written in the **Tactical** column.

To save time and space the following abbreviations may be used:

Movement

Speed (note: These are the same abbreviations used on the Speed Counters).

I	Immobile
S	slow ahead
<u>S</u>	slow astern
M	medium ahead
<u>M</u>	medium astern
F	fast ahead
<u>F</u>	fast astern
V	very fast ahead
<u>V</u>	very fast astern

Manoeuvre

Fx	move x cm straight forward
Ax	move x cm straight aft
Px	use turn template to move x cm to port
Sx	use turn template to move x cm to starboard

Tactical

BD	attempt boarding action
SS	scuttle ship
AN	anchor vessel
GR	Attempt to run vessel aground

Once order writing is done, and the orders phase is complete, no changes may be made to the orders. All orders must be carried out as written if possible (a boarding action cannot be carried out if there is no enemy vessel in contact).

Example: The Confederate player hopes to ram the Monitor and writes down the orders for the Virginia as follows:

Speed	Movement	Tactical
M	F10P5F10	BD

During the turn the Virginia will move at Medium speed, moving 10cm straight ahead, 5cm turning to port, and a further 10cm straight ahead. If the Virginia succeeds in ramming the Monitor, the crew must attempt to board. If no collision occurs, the order to board is ignored.

Once all orders have been written, a speed counter is placed by each vessel. This makes it easier to tell what speed a vessel is doing for the purposes of collisions, gunnery etc.

Movement

Speed

A vessel moves a distance determined by its current speed, as indicated by Table 2.

Table 2. Move Distances	
Vessel's Current Speed	Move Distance
Slow	10 cm
Medium	25 cm
Fast	40 cm
Very Fast	60 cm

A vessel **MUST** move the full distance, even if this causes it to collide with another vessel or with terrain (see COLLISIONS and RUNNING AGROUND).

Changing Speed

A vessel may increase or decrease its speed by one level per turn, e.g. if travelling at Medium in the previous turn it may increase to Fast or decrease to Slow this turn. Changes of speed are made during the Orders Phase.

Vessels may change from forward to reverse or vice versa providing one of the following applies:

- The vessel was Immobile for the complete turn preceding the current turn.
- The vessel was involved in a successful ramming action on the previous turn and is not locked.
- The vessel became locked or grounded last turn and is attempting to break free (though the vessel will only move if the attempt is successful).

A vessel moving in reverse may move at speeds up to one level less than its normal maximum (any vessel can move Slow in reverse), except Union Double-ENDER gunboats that may move at full speed in either direction.

Example: The CSS Atlanta may move at up to Fast. Therefore she may move at up to Medium in reverse. The USS Port Royal may move at any speed up to Fast in either direction, as she is a Double-ENDER.

Turning

If a vessel wishes to turn it may do so by using the appropriate turn template. The vessel moves the required distance around the outer edge, with its front edge lining up with the appropriate line on the template (see figure 2).

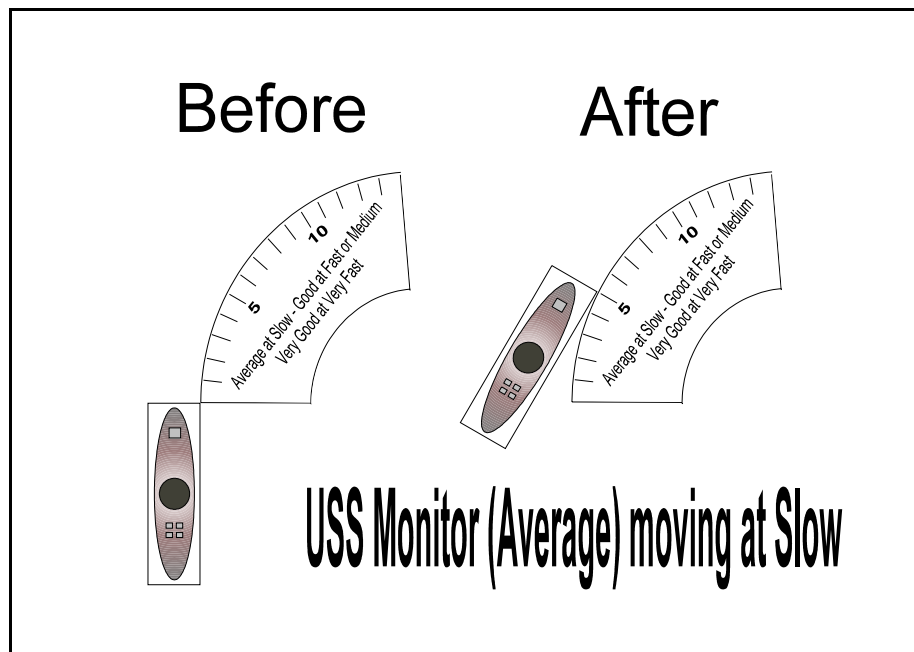


Figure 2

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Which template is used depends upon the vessel's current speed and manoeuvrability. The amount a vessel may turn is limited only by its current speed. Any part of a vessel's move may be used to turn.

*Example: The USS Monitor(a vessel with Average Manoeuvrability) is moving at medium, this gives it a move of 25cm. It could move 8cm straight, turn using the **Average at Medium** template for 10cm and move straight for a further 6cm, for a total of 25cm.*

Turns may normally be made either to port or to starboard, although rudder damage can result in a vessel being limited to turns in one direction.

Stationary Vessels

Stationary vessels may not turn unless they are side wheel paddle steamers. If so they may turn on the spot up to 90° per turn.

Anchoring

This must be ordered in the Orders Phase.

To anchor, a vessel must remain immobile for a full turn.

Once it has anchored, a vessel swings to point the bow upstream (if using drifting rules) and will remain immobile until the anchor is raised.

It takes one full move to raise the anchor, after which the vessel may move as normal.

Running Aground

Vessels may have to take a grounding test when passing over shallow water, mud banks, sand bars or wrecks.

To test for running aground, roll 1d10 on Table 3. This roll must be made in each turn that the vessel moves over an area where it must test. If it has to test, a vessel always runs aground on a roll of 1 and avoids running aground on a roll of 10.

Table 3. Running Aground		Base Chance (given by depth) or less on 1d10	
	Depth of Water		
Draught	Mud Banks or Sand Bars or Wrecks in Shallow Water	Shallow Water or Wrecks in Rivers or Estuaries	Deep Water
V.Shallow	1	-	-
Shallow	3	-	-
Medium	6	1	-
Deep	8	5	-
"-" indicates that a vessel does not have to test			
Modifiers			
Moving Slow			-2
Moving Fast			+1
Moving Very Fast			+2
Local Pilot			-1
Vessel has lost at least ½ Flotation Points			+2
Vessel attempting to run aground			+2

Example: The CSS Virginia is deep draught and enters shallow water moving at Slow speed. She rolls on table 3. and will ground on a 3 or less (5, -2 for moving slow,). She rolls a 2 and runs aground.

If a vessel runs aground it must test for damage. Roll on Table 4.

Table 4. Grounding Damage	
Roll 1d3 plus Modifiers	
Moved Fast	+1
Moved Very Fast	+2
Moved Slow	-2
Very Small Vessel	-4
Small Vessel	-1
Large Vessel	+1
Very Large Vessel	+2
Aground on Mud Bank/Sand Bar	-1

Any damage taken is hull damage, reducing HDP (see EFFECTS OF HITS). Note: armour has no effect upon grounding damage.

If damage is taken roll 2d6, if the roll is less than or equal to the damage taken, then the vessel takes 1 flooding point (2 if moving Very Fast). It will flood automatically on a 2 and will not flood, whatever damage was taken, on a 12.

Any vessel running aground immediately has its speed reduced to Immobile.

She rolls on Table 4. to determine the quantity of damage taken, rolling a 2, with +1 for large she takes 3 points. She then rolls a 2d6 to check for flooding and rolls a 5, as this is higher than the damage sustained she does not begin to flood.

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Breaking Free

Any vessel that ran aground may attempt to break free in the following turn and in each subsequent turn by rolling on Table 5.

Table 5. Breaking Free from Grounding	
Base Chance 5 or less on 1d10	
Very Shallow Draught	+4
Shallow Draught	+2
Deep Draught	-2
Vessel's Current Max Speed	
Slow	-1
Fast	+1
Very Fast	+2
Flooding	-2
Each subsequent attempt after the first (Cumulative)	-1

If it succeeds, it moves in a straight line in the intended direction at Slow speed. It may move normally in the following turn.

If a natural 10 is rolled, the vessel is permanently aground and must be towed off (See OPTIONAL RULES).

A natural roll of 1 is always a success unless the vessel is permanently aground.

Example: In the turn following that in which she ran aground, the Virginia attempts to break free. She will succeed on a 3 (5, -2 for deep draught). If she succeeds she will move in the direction she attempted to move at Slow speed. If she fails she will need a 2 or less next turn. If she fails again she will need a 1 on any subsequent turn.

Collisions

When, at the end of movement, a vessel's base has contacted another, it has collided, even if it has accidentally collided with a vessel on its own side.

Collision Damage

If the vessels collide there is the possibility of one or both sustaining damage.

Before resolving Collision Damage, Collision Speed must be established. This depends upon the angle at which the striking vessel hits (see Figure 3). It is calculated as follows:

- If the collision occurs in the Broadside arc, the Collision Speed is that of the Striking Vessel.
- If the collision occurs in the Bow arc, the Collision Speed is that of the Striking Vessel, increased by the level of speed of the struck vessel.

Example: The Virginia Rams the Monitor bows on. Both vessels are moving at Medium. The resultant speed is Very Fast, as the Monitor's speed increases the relative speed of the Virginia by two levels.

- If the collision occurs in the Port or Starboard Bow arc, the Collision Speed is that of the Striking Vessel, increased by half the level of speed of the struck vessel.

Example: The Virginia Rams the Monitor to the Port Bows. Both vessels are moving at Medium. The resultant speed is Fast, as the Monitor's speed increases the relative speed of the Virginia by one level.

- If the collision occurs in the Port or Starboard Quarter arc, the Collision Speed is that of the Striking Vessel, decreased by half the level of speed of the struck vessel.

Example: The Virginia Rams the Monitor to the Port Quarter. Both vessels are moving at Medium. The resultant speed is Slow, as the Monitor's speed decreases the relative speed of the Virginia by one level.

- If the collision occurs to the Stern arc, the Collision Speed is that of the Striking Vessel, decreased by the level of speed of the struck vessel.

Example: The Virginia Rams the Monitor to the Stern. Both are moving at Medium. The resultant speed is less than Slow, as the Monitor's speed decreases the relative speed of the Virginia by two levels.

If the relative speed is reduced to below slow neither vessel will take damage.

If the relative speed is greater than Very Fast then treat as Very Fast.

If the Struck vessel is moving astern, swap bow for stern, quarter for port or starboard bow and vice-versa.

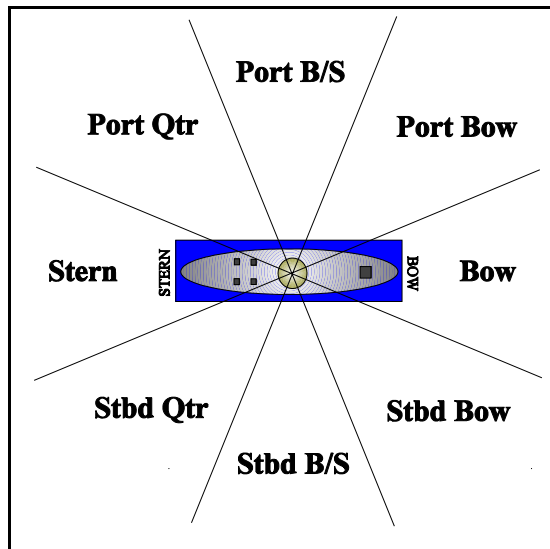


Figure 3

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The vessel tests for damage on Table 6.

Table 6. Collision Damage	
Roll 1d6 and add modifiers	
Contacted to bow and Ram equipped	-6
Hull Armour (if collision not to bow, or not ram equipped)	
Unarmoured	0
Tinclad	-1
Light	-2
Medium	-4
Heavy	-6
Super Heavy	-8
Collision Speed	
Slow	-1
Fast	+1
Very Fast	+2
Struck by Bow of Ram equipped vessel	+2
Struck by Bow of Very Small vessel	-4
Struck by Bow of Small vessel	-2
Struck by Bow of Large vessel	+1
Struck by Bow of Very Large vessel	+2
Collision Arc of Testing Vessel	
Bow	0
Port or Starboard Bow	+1
Port or Starboard Broadside	+2
Port or Starboard Quarter	0
Stern	-1

Example: The Virginia rams the Monitor in its starboard bow at slow speed. The Monitor is moving at slow. This gives a collision speed of Medium. Damage is first rolled for the Monitor. She rolls a 4 and so takes 4 damage (4, -4 for Medium Hull Armour, +2 for struck by ram, +1 for struck by bow of large vessel and +1 for struck to starboard bow arc). The Virginia must now roll for damage. She rolls a 3 and takes no damage (3, -6 for Ram equipped).

On any roll where damage is taken roll 2d6. If the roll is less than or equal to the damage taken the vessel is considered to have been holed below the waterline and takes flooding points equal to half the damage taken (rounded up) (see FLOODING, under EFFECTS OF HITS).

On a roll of 2, flooding is automatic. On a roll of 12 no flooding occurs.

Example: The Monitor rolls 2d6 and gets 3. Therefore she takes flooding damage as this is less than the damage taken due to collision. She takes 2 flooding points (4 divided by 2).

Special Rules - Sidewheel and Sternwheel Vessels

Sidewheel Vessels

When a sidewheel vessel is struck to any arc other than bow or stern, roll 1d6, on a 5 or 6 (4, 5 or 6 if broadside arc) the wheel on that side is hit. Roll a further d6. If this is equal to or less than the damage sustained the wheel is disabled (see HIT DESCRIPTIONS).

Sternwheel Vessels

When a sternwheel vessel is struck to the stern or quarter arcs, roll 1d6, on a 4, 5 or 6 (3, 4, 5 or 6 if stern arc) the wheel is hit. Roll a further d6. If this is equal to or less than the damage sustained the wheel is disabled (see HIT DESCRIPTIONS).

Locking

When a collision has occurred there is a chance that the two ships will become locked together. Roll on Table 7.

Table 7. Locking	
Base Chance 5 or less on 1d10	
Vessel which collided bows on is equipped with ram	-2
Both are Fully Rigged Vessels	+2
Either vessel took flooding hits	+1 per point

Example: The Virginia now rolls on Table 7 to test for locking. She will become locked on 5 or less on a d10 (base 5, -2 for Vessel which collided bows on is equipped with Ram, +2 for flooding hits taken by the Monitor). She rolls a 3 and becomes locked.

If the vessels lock, they move the remaining move distance of the larger vessel, in the direction the larger vessel was moving. If both are the same size, they move the remaining move distance of each vessel, in the direction each was moving.

The resultant speed is that of the larger vessel, in the direction the larger vessel was travelling, modified as below, unless both vessels are the same size, when it is the speed and direction of the vessel that did **not** collide to the bow, or port or starboard bow. If both vessels collided to the bow, or port or starboard bow and are the same size, the resultant speed is that of the faster, reduced by that of the slower, in the direction of the faster vessel's movement.

Modifiers to Resultant Speed - Locked Vessels

Unless the vessel it collided with was Very Small, a vessel that collided in its bow, port bow or starboard bow arcs has its speed reduced by one level after completing its movement this turn.

If the vessel it collided with was Very Small or it collided in its broadside, quarter or stern arc, its speed is unaffected.

Example: The Virginia has collided with the Monitor and locked. She had only moved half her move distance and, as she is the larger vessel both vessels now move the remaining distance in the direction the Virginia was travelling. The resultant speed is Immobile, as the Virginia's speed is reduced by the speed of the Monitor, as the collision was bows on (Had she not become locked she would have come to a halt and the speed of the Monitor would have been unaffected).

Vessels That Do Not Lock

If two vessels collide and do not lock, the resulting positions and speeds are determined as follows:

The smaller vessel is turned through the least angle so as to be alongside and in contact with the larger vessel and both vessels move any remaining distance not moved before the collision.

If both vessels are the same size they are both turned equally through the least angle so as to come alongside one another.

Unless the vessel it collided with was Very Small, a vessel that collided in its bow, port bow or starboard bow arcs has its speed reduced by one level after completing its movement this turn.

If the vessel it collided with was Very Small or it collided in its broadside, quarter or stern arc, its speed is unaffected.

Example: If the Virginia and the Monitor had not locked, the Monitor would have been turned to be alongside the Virginia, and both vessels would have moved their remaining move distance. Both vessels's speeds are reduced by one level after movement, bringing both to immobile.

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Breaking Free by Locked Vessels

If two vessels have become locked they may attempt to break free. This may be either voluntary as part of their movement or involuntary if collided with by another vessel while locked, providing the vessel causing the test is no more than one size smaller.

A test is made once for both vessels in the turn following that in which they became locked and each subsequent turn in which one or both vessels attempts to break free.

Tests are also made when a collision with the other vessel occurs.

To break free roll on Table 8.

Table 8. Breaking free when locked	
Base Chance 5 or less on 1d10	
Either vessel suffered Flooding due to Collision	-1 per Flooding Point Suffered
Vessel which collided bows on attempting to break free	+1 / +3 if Ram was used
Both vessels attempting to break free	+2

If a vessel is locked with another that is sinking, it may attempt to break free each turn until the second vessel sinks. If it fails to break free before the other vessel sinks it will do the following:

- If it is smaller or equal in vessel size to the sinking vessel it sinks with it.
- If it is larger than the sinking vessel it prevents it from sinking and can continue to attempt to break free each round.

If the attempt was voluntary and successful, each vessel attempting to break free moves in a straight line, in reverse at slow speed if it was the striking vessel, otherwise forward or reverse. They now have speed of Slow in the direction they moved.

If the attempt was involuntary and successful, the vessels remain in place, but no longer count as locked.

Example: In the above incident between the Virginia and Monitor they became locked. In the next turn the Virginia attempts to break free (It is in the Monitors best interest to remain locked as she can then pound the Virginia at point blank range as she is likely to sink soon anyway). Table 8 gives a base chance to break free of 6 (5, -2 for the flooding damage to the Monitor, +3 for the Virginia's ram). A 3 is rolled and the Virginia breaks free..

Gunnery

To fire, a vessel must have a gun that:

- i. Has an arc of fire that covers the target.
- ii. Can trace a clear line of fire from the firer's base to the target's base. This line of fire is blocked if it passes over the base of another vessel or an island, but not a sand or mud bank.
- iii. Was NOT involved in a collision with a collision speed of greater than Slow this turn.
- iv. Did NOT run aground at any speed other than Slow this turn.

The intent to fire should be declared before measuring range. If, after measuring, the target is found to be out of range, the vessel still fires, but the shot has no effect.

All gunnery in one turn is considered to be simultaneous.

Types of Gun

Guns consist of five major types, Rifles (R), Smoothbores (SB), Columbiads (C), Mortars (M) and Howitzers (H). All except Columbiads also come in one of five sizes depending upon weight of shot, these are; Very Light (VL), Light (L), Medium (M), Heavy (H) and Super Heavy (SH). Columbiads only come in Heavy and Super Heavy.

Guns are also defined by their facing, mounting and location. For full details see **Guns**, under Vessel Design.

Types of Gunnery

- Direct Fire

This is where the gun is fired on a relatively flat trajectory. It includes all gunnery except that from howitzers at over 25cm range and mortars at any range.

- Indirect Fire

This is where the projectile is fired on a high angled trajectory and consists of fire from howitzers at over 25cm range and mortars at any range.

Arcs of Fire

The area around a vessel is divided up into a number of arcs. Which arcs a gun may fire into are defined by its mounting. The arc of fire used depends upon the type of mounting used by the firing gun.

For more details of arcs of fire, see **Ship Design**.

The arcs of fire are shown in Figure 4.

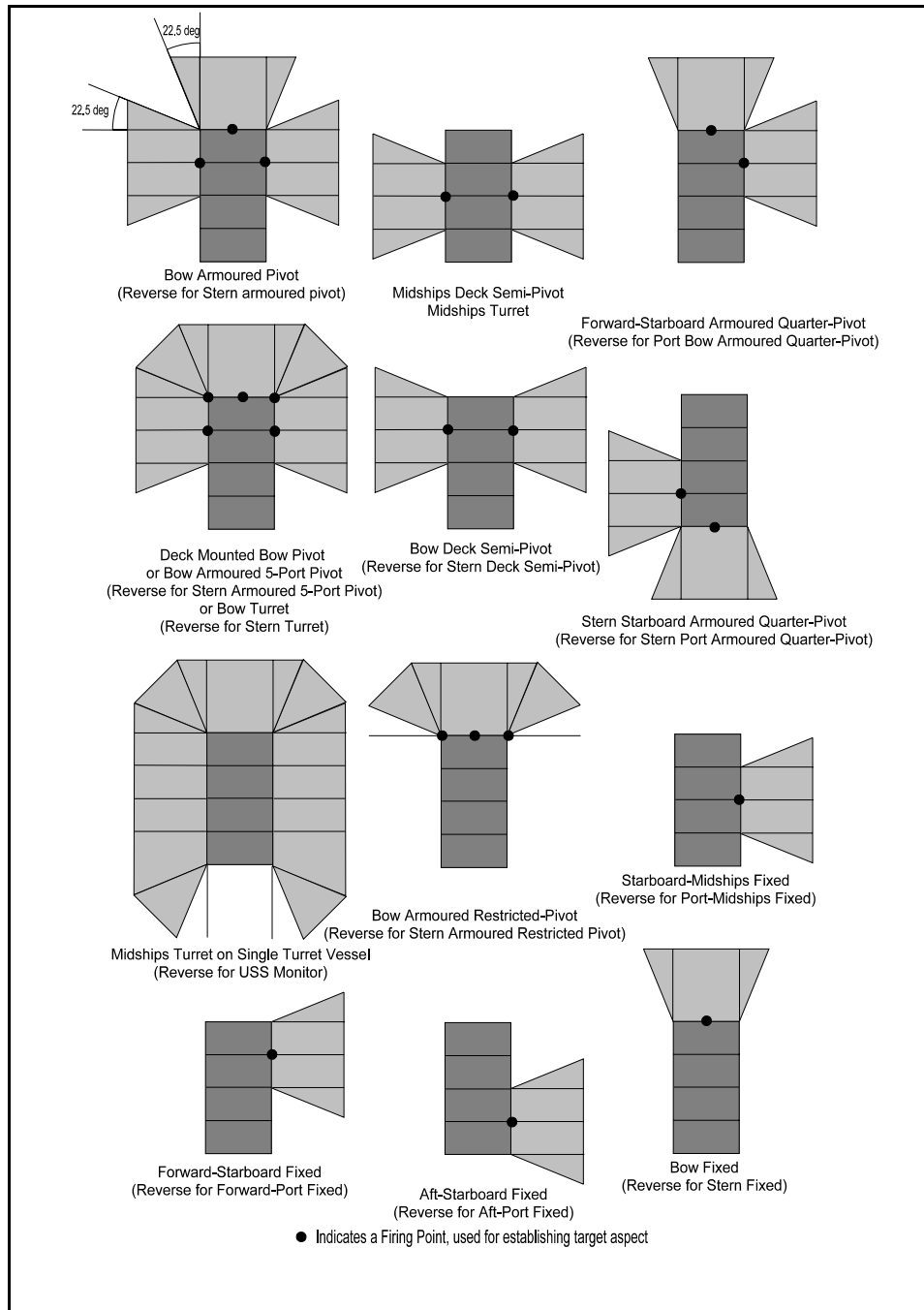


Figure 4

The angle for arcs of fire may be measured using the template provided (see Figure 5).

Target Aspect

To establish which facing to use for the target vessel, take a line from the firing point of the firing vessel nearest to the target vessel, to the centre of the target vessel. Note: for turret mounted guns, the firing point is the turret centre.

The target's aspect used is that of the face that the connecting line crosses. It is that aspect's hit location table and armour values that will be used for determination of damage.

Targetting size is based upon the aspect of the target. It is given as x/y, where x is the targetting size when firing at the bow or stern aspect, and y when firing at the side. For details see SHIP DESIGN.

Example: The CSS Virginia, marked 'V' (see Figure 5), may fire on three monitors. It may fire its bow pivot (restricted-arc) at either Monitor 'A', which will count as Bow aspect, or Monitor 'B', which will count as Broadside aspect. Any forward broadside guns may fire at the Broadside of Monitor 'B'. Any midships or aft broadside guns may fire at the stern of Monitor 'C'. Its Stern (restricted-arc) Pivot cannot fire, as nothing is in arc.

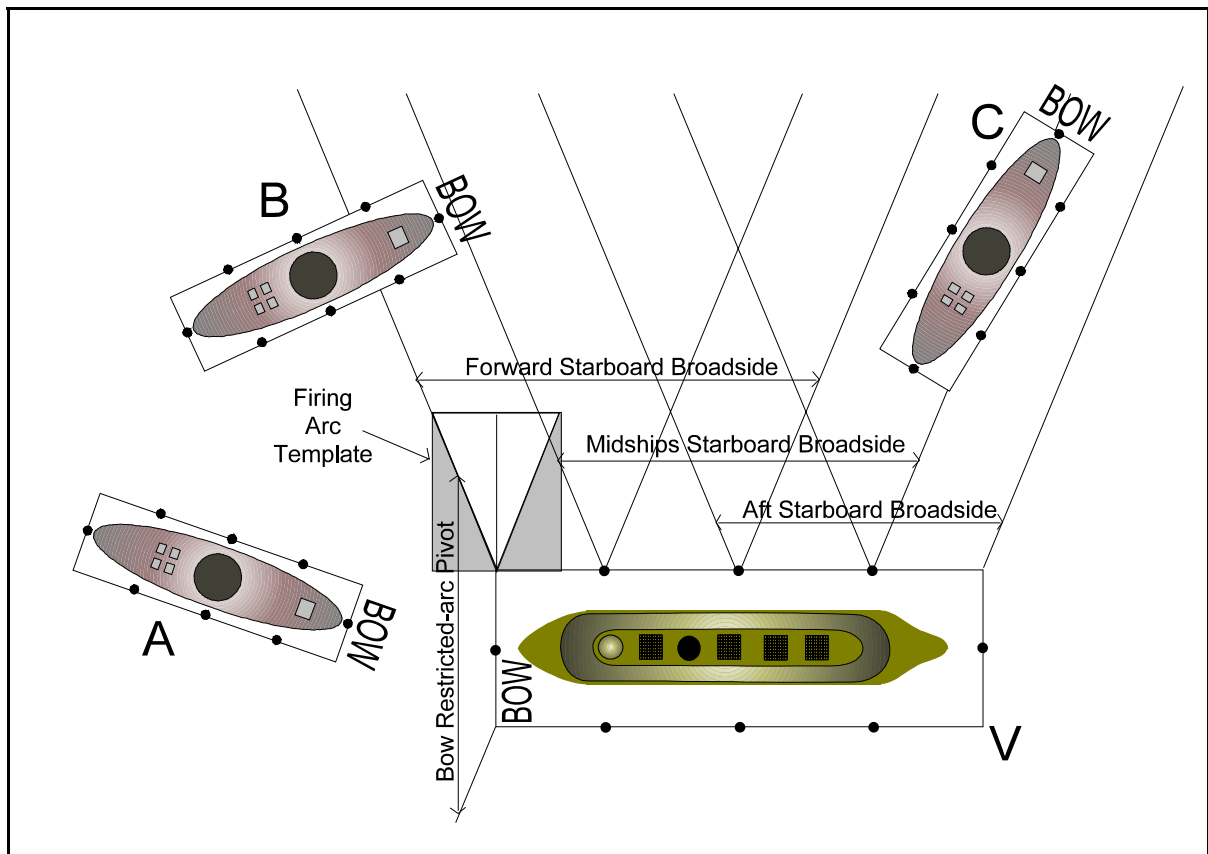


Figure 5

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Direct Fire

Ranges

Ranges are divided into pointblank (PB), short (S), medium (M), long (L) and extreme (E) as shown in Table 9.

Gunport mounted guns may not fire at targets at extreme range, as the gunports limited their elevation.

The range is measured as the shortest distance between the bases of the target and firer.

Table 9. gunnery ranges											
Range (in cm)	0	5	20	50	75	125	150	250	300	400	500
SHSB	PB	S	M	L	E						
HSB	PB	S	M	L		E					
MSB	PB	S	M	L		E					
LSB	PB	S	M	L	E						
VLSB	PB	S	M	L	E						
SHR	PB	S		M		L		E			
HR	PB	S		M		L		E			
MR	PB	S		M		L		E			
LR	PB	S	M	L		E					
VLR	PB	S	M	L	E						
SHC	PB	S		M		L		E			
HC	PB	S		M		L		E			

Hitting the Target

To determine if a gun has hit roll a d10 on Table 10, attempting to get equal or less than the modified base chance.

An unmodified roll of 1 will always hit, conversely an unmodified roll of 10 always misses, signifying that the gun has misfired.

Table 10. direct fire			Base Chance 5 or less on 1d10
Range			
Point Blank			+4
Short			+2
Medium			0
Long			-2
Extreme			-4
Firing Vessel	Moving at Fast		-1
	Moving at Very Fast		-2
Target Vessel	Moving at Fast		-1
	Moving at Very Fast		-2
	Immobile		+1
Target Size (If greater than Point-Blank Range)	A		-4
	B		-2
	C		-1
	D		0
	E		+1
	F		+2
Target Obscured	¼ to ½		-1
	½ to ¾		-2
	Over ¾		-4

Misfires

If a gun misfires (a 10 rolled to hit) roll on table 11 for the result

Table 11. - Misfires		Roll 1d10	
Confederate		Union	
Roll	Effect	Roll	Effect
1-7	None	1-8	None
8-9	Jams	9	Jams
10	Bursts	10	Bursts

If several guns are being rolled for simultaneously, determine randomly which gun has jammed.

If a gun firing Red Hot Shot suffers a Jams result, it is automatically a Bursts Result

Apply the result as indicated below:

- **No Effect** The gun simply misfires and may attempt to fire again in the next turn.
- **Jams** The primer tube breaks off in the gun, or it is similarly rendered useless. The gun may no longer fire until unjammed in the Repair Phase.
- **Bursts** The gun explodes, putting it permanently out of action. The firing vessel (or fort) takes 1d6 Hull damage (or Structural Damage if a Fort), a fire test marker is placed on the vessel and it must test in the fire test phase.

Example: The Virginia fires a broadside at the Monitor at a range of 45cm. She is armed with three Medium Smoothbores, one Medium Rifle and one Heavy Rifle.

The MSBs are at Medium range and the rifles at Short. This gives her a chance to hit for the MSBs of 3 (5, -2 for a B class target), the Medium Rifle of 5 (5, +2 for Short Range -2 for a B class target) and the Heavy Rifle 5 (5, +2 for Short Range, -2 for a B class target). She rolls 1, 5 and 10 for the MSBs, a 3 for the MR and a 4 for the HR. One shot from the MSBs hits and one misfires, the Medium Rifle hits, and the Heavy Rifle hits. Rolling for the misfire she gets a 9, one of the Medium Smoothbores is jammed.

Firing At Vessels Obscured by Other Vessels

If a vessel, obscured by another, is fired upon, use the normal rules, including the modifiers for obscured. If the shot hits, treat as an ordinary hit. If it misses, but the roll would give a hit if the modifier for obscuration was ignored, then the vessel obscuring is hit. If it would still not have hit, it misses both vessels.

Example: The USS Weehawken fires on The CSS Atlanta, which is partially (1/4 to 1/2) obscured by the USS Nahant. She rolls a 3 and a 6. The chance to hit is 6 without the effect of the Nahant obscuring the target, and 4 when this is included. Therefore the 3 hits the Atlanta and the 6 hits the USS Nahant.

Indirect Fire

Howitzers and Mortars were guns capable of firing shell only. They were designed to fire on a very high trajectory, landing a shell on the target from above. For this reason they are treated in a different manner to other, direct fire, guns.

Howitzers firing at a target within 25cm treat it as direct fire. All fire from Mortars is treated as indirect.

To determine the outcome of indirect fire, place the deviation template over the centre of the target vessel or fort, with the 6 position toward the firer.

Roll 1d10 . Compare the result to the template (Figure 6). This gives the direction in which the shot deviates.

The distance by which a shell deviates depends upon the size of weapon and the range. Range is given in Table 12 and deviation distance in Table 13.

Table 12. gunnery ranges (Indirect)						
Range (in cm)	0	10	25	50	100	200
SHH	Direct	S	M			
HH	Direct	S	M			
MH	Direct	S	M			
LH	Direct	S	M			
VLH	Direct	S				
SHM	-	S	M	L	E	
HM	-	S	M	L	E	
MM	-	S	M			
LM	-	S	M			

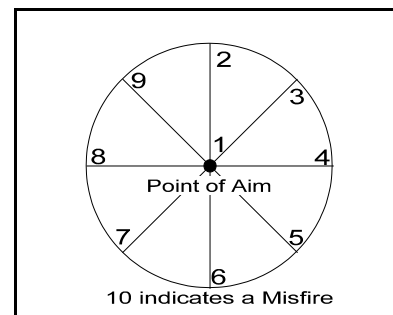


Figure 6

'-' indicates that the weapon may not fire within this range as it is too close

Table 13. deviation			
Short	Medium	Long	Extreme
1d5	1d10	2d10	1d10+10

The point of impact lies in the direction indicated on the template, the distance in cm indicated by table 13.

If the impact point lies over the base of the target, or that of any other vessel, that vessel is hit. Roll for hit location normally, using the Plunging Fire column.

A shell detonation roll must be made as normal.

If a misfire is rolled, use the same rules as for direct fire.

Example: Fort Monroe fires two of its medium howitzers at the Virginia, at a range of 35cm. Table 12 indicates that this is short range. The Virginia is heading directly towards the fort. Placing the template over the Virginia, a 9 is rolled for the first gun and a 6 for the second. The 9 indicates that the shot is over and left. Rolling on table 13 gives a distance of 3cm. This misses the Virginia. The second shot is short. The distance roll gives 5, indicating that the shot missed its aim point by 5cm. This is still over the Virginia's base, so the shot hits. The hit location roll should be made on the Plunging column.

Hit Locations

When any shot hits roll 1d10 on Table 14. on the section appropriate to that vessel's configuration.

Table 14 Hit locations					Roll 1d10 Note: a 10 indicates a critical hit (see table 14)				
Conventional/Casemate Vessel					Single Turret Monitor				
Roll	Bow	Broadside	Stern	Plunging	Roll	Bow	Broadside	Stern	Plunging
1	Hull	Hull	Hull	Hull	1	Hull	Hull	Hull	Hull
2	Gun	Gun	Gun	Casemate	2	Hull	Hull	Hull	Deck
3	Casemate	Casemate	Casemate	Casemate	3	Gun	Gun	Gun	Deck
4	Casemate	Casemate	Casemate	<u>Casemate</u>	4	Turret	Turret	Turret	Deck
5	Casemate	Casemate	Casemate	Deck	5	Turret	Turret	Turret	Deck
6	<u>Casemate</u>	<u>Casemate</u>	<u>Casemate</u>	Deck	6	Turret	Turret	Turret	Deck
7	<u>Casemate</u>	<u>Casemate</u>	<u>Casemate</u>	Deck	7	Turret	Turret	Stack	Turret
8	Stack	Stack	Stack	Deck	8	Turret	Stack	Stack	Turret
9	Stack	Stack	Stack	Deck	9	Turret	Stack	Stack	Turret
Sidewheel Vessel					Double Turret Monitor				
Roll	Bow	Broadside	Stern	Plunging	Roll	Bow	Broadside	Stern	Plunging
1	Hull	Hull	Hull	Hull	1	Hull	Hull	Hull	Hull
2	Gun	Gun	Gun	P.Wheel	2	Hull	Hull	Hull	F.Turret
3	Casemate	Casemate	Casemate	S.Wheel	3	Gun	Gun	Gun	F.Turret
4	<u>Casemate</u>	<u>Casemate</u>	<u>Casemate</u>	Casemate	4	F.Turret	F.Turret	A.Turret	A.Turret
5	<u>Casemate</u>	<u>Casemate</u>	<u>Casemate</u>	<u>Casemate</u>	5	F.Turret	F.Turret	A.Turret	A.Turret
6	P.Wheel	Wheel	P.Wheel	Deck	6	F.Turret	A.Turret	A.Turret	Deck
7	S.Wheel	Wheel	S.Wheel	Deck	7	F.Turret	A.Turret	A.Turret	Deck
8	Stack	Stack	Stack	Deck	8	F.Turret	Stack	A.Turret	Deck
9	Stack	Stack	Stack	Deck	9	F.Turret	Stack	A.Turret	Deck
Sternwheel Vessel					Triple Turret Monitor				
Roll	Bow	Broadside	Stern	Plunging	Roll	Bow	Broadside	Stern	Plunging
1	Hull	Hull	Hull	Hull	1	Hull	Hull	Hull	Hull
2	Gun	Gun	Gun	Casemate	2	Gun	Gun	Gun	F.Turret
3	Casemate	Casemate	Casemate	Casemate	3	F.Turret	F.Turret	A.Turret	M.Turret
4	Casemate	<u>Casemate</u>	<u>Casemate</u>	<u>Casemate</u>	4	F.Turret	F.Turret	A.Turret	A.Turret
5	Casemate	<u>Casemate</u>	Wheel	Deck	5	F.Turret	M.Turret	A.Turret	Deck
6	<u>Casemate</u>	Wheel	Wheel	Deck	6	F.Turret	M.Turret	A.Turret	Deck
7	<u>Casemate</u>	Wheel	Wheel	Deck	7	F.Turret	A.Turret	A.Turret	Deck
8	Stack	Stack	Stack	Deck	8	F.Turret	A.Turret	A.Turret	Deck
9	Stack	Stack	Stack	Deck	9	F.Turret	Stack	A.Turret	Deck
On non-casemate vessels, count Casemate hits as Hull									

Underlined locations indicate hits to the armoured area of partially armoured vessels (see **Armour**).

Any 10's rolled indicate that a critical hit has been inflicted. Roll on Table 15 to determine what type.

Table 15. Critical Hits			Roll 1d6		
Roll	Hit	Armour	Specials		
			Roll	Effect	Armour
1	Pilot House	Pilot House	1	Gun Port	None
2	Port Jammed	Casemate/Turret/Hull	2	Gun Port	None
3	Fire	Hull	3	Machinery	Hull
4	Flooding	Hull	4	Turret Jams	None
5	Rudder	Rudder	5	Boiler Bursts	Hull
6	Special	See Table	6	Magazine Explodes	Hull
If Special is rolled, roll 1d6 on the Special table					

Armour

Vessels have a chance to deflect hits from certain categories of guns. The armour rating used to deflect a hit will depend upon the location of the hit. The player controlling the vessel struck rolls 1d10 on Table 16, to check for armour deflection, using the appropriate column for the armour and row for the gun used.

Table 16. Armour Deflection								Roll Less Than or Equal to Target Number plus Modifiers on 1d10							
Gun Type (Solid Shot)	U	C	T	L	M	H	S	Gun Size (Shell)	U	C	T	L	M	H	S
SHSB, SHC	*	*	*	5	7	9	10	Super Heavy	*	5	*	9	10	-	-
HSB, HC	*	3	*	7	9	10	12	Heavy	*	7	*	10	-	-	-
MSB	*	5	*	9	10	-	-	Medium	*	9	3	-	-	-	-
LSB	*	7	*	-	-	-	-	Light	*	10	3	-	-	-	-
VLSB	*	9	5	-	-	-	-	Very Light	*	-	5	-	-	-	-
SHR	*	*	*	*	3	5	7	Range	Modifier						
HR	*	1	*	3	5	7	9	Extreme	+3						
MR	*	3	*	5	7	9	10	Long	+1						
LR	*	5	*	9	10	-	-	Short	-1						
VLR	*	7	3	10	-	-	-	Point Blank	-2						
** Hit automatically penetrates. No test required.								-' Shot cannot penetrate armour at any range. No test required							

Armour Columns are as follows:

U - Unarmoured

C - Cottonclad

T - Tinclad

L - Light Ironclad

M- Medium Ironclad

H - Heavy Ironclad

S - Super Heavy Ironclad

If the table shows a '*' or '-' for the appropriate armour and gun type, no roll is required as either the shot or shell has automatically penetrated (if a '*' is shown) or is automatically deflected (if a '-' is shown).

For non critical hits, use the armour rating for the indicated location.

For critical hits use the armour as indicated on the critical table (Table 15).

Vessels with partial armour, use the appropriate armour column if the location is underlined and the Unarmoured column for all other hits.

If the modified dice roll is less than or equal to the number derived from the table, the armour has deflected the hit which has no further effect, except shells deflected by cottonclad armour (see effects of hits). If the roll is greater than the number derived from the table, the armour fails to deflect the damage, which is applied as per the appropriate section. A roll of 10 always fails to deflect. A roll of 1 always deflects.

Example: The Virginia hit the Monitor once with a Medium smoothbore, once with a Medium Rifle and once with a Heavy rifle. All hits are rolled on the single turret monitor table, using the broadside column.

The rolls are 7 with the Smoothbore, 10 with the Medium Rifle and 2 with the Heavy Rifle, these give a turret hit, a hull hit and a critical hit. As the Monitor is armoured, deflection must now be tested for. The turret armour is Heavy, which cannot be penetrated by a Medium Smoothbore. A d10 is rolled for the critical, giving an 8. Consulting Table 15, this gives a Pilot house hit. The Monitor's Pilot house is armoured, so a test must be made. The pilot house is heavily armoured and the gun is a Medium Rifle, giving a deflection chance of 10 (9, +1 for long range). The Monitor is unlucky and rolls a 10, the shot penetrates, causing a pilothouse critical. The hull has Medium armour, giving a deflection chance of 6 (7, -1 for Short Range) against the Heavy rifle, the Monitor rolls a 3, deflecting the hit.

Effects of Hits

Any hits that penetrate armour inflict damage upon the target vessel. What damage is inflicted depends upon hit location. The amount of damage is decided by the size of the gun inflicting the damage. This is given on Table 17.

Table 17. Gun Damage										
Firing Shot (Solid or Red Hot)						Firing Shell				
Size of Gun	PB	S	M	L	E	Size of Gun	DP Inflicted			
Very Light	2/0	1/0	1/0	1/0	1/0	Very Light	2/0			
Light	4/0	2/0	2/0	2/0	1/0	Light	4/0			
Medium	6/0	4/0	4/0	3/0	2/0	Medium	6/1			
Heavy	8/1	6/1	6/0	5/0	4/0	Heavy	10/2			
Super Heavy	10/2	8/1	8/0	7/0	6/0	Super Heavy	16/2			
Damage is given for Penetrating/Non-penetrating Hits						Shell damage is unmodified by range				
Shell Detonation (roll 1d10)						Damage for Shells is given x/y where x is for Detonated and y is for Undetonated				
Union	1-8									
Confederate	1-7									

Solid Shot

Two levels of damage are given for solid shot. One is for shots that penetrate, and the other is for shots that are deflected by armour. If a shot penetrates, use the first number for the appropriate range. If it does not penetrate, use the second number. Non-penetrating hits that inflict damage DO NOT also cause criticals. Any HDP, TDP or SDP inflicted as part of the critical are suffered by the target, but no other effects of criticals are suffered.

Example: The Monitor took a non-penetrating hit to the hull from a Heavy Rifle at Short Range. At short range a Heavy Solid shot does 6/1 damage. As the shot did not penetrate, 1 Hull damage point is inflicted. Had the shot penetrated, 6 points would have been inflicted.

Shells

Shells had made wooden vessels almost obsolete, as they could smash an unarmoured vessel to pieces very rapidly. But they were not always reliable. The Confederates in particular had difficulties with fusing. To simulate this shells have special rules.

If a shell hits an armoured location then a standard armour deflection test should be made. If the round penetrates or has hit a cottonclad or unarmoured location then roll for shell detonation. This is done by rolling a d10 on Table 17. If the shell penetrates but does not detonate, the vessel takes the damage indicated after the slash (/). If the shell penetrates and detonates, the amount of damage taken is the number before the slash, the vessel has a fire test marker placed on it and must take a fire test at the end of the turn. If the armour is U or C and the shell detonates, a fire test marker is placed on the vessel and tested for in the fire test phase. EXCEPTION: No fire test counter is placed for stack hits.

Unless indicated by hit description, shell damage is handled in the same way as any other damage.

Red Hot Shot

Red hot shot is treated as solid shot for damage purposes. Any vessel sustaining a penetrating hit to any location except stack or sustaining a hit to cottonclad armour with red hot shot has a fire test marker placed on it and tests in the fire test phase.

Hit Descriptions

Boiler Explodes

The boiler is hit and explodes, releasing steam throughout the vessel. The vessel is abandoned, reduces speed by one level per turn and cannot steer or fire its guns. The vessel is treated as if having been abandoned due to a failed morale test.

Casemate

On vessels without a casemate, treat this as a hull hit.

Other than for armour purposes, these hits are treated as Hull hits.

Deck

Except for armour, treat all deck hits as hull hits.

Fire

A fire breaks out on board. Place a fire test marker on the vessel. It must test in the fire test phase.

The vessel also takes hull damage as if it had taken a hull hit.

Flooding

Test for armour deflection using hull armour, if it fails to deflect then the vessel is holed below the waterline. Flooding will occur. The vessel takes 1d3 flooding points, adding 1 extra point if the round was super heavy. The vessel will lose flotation points equal to the current flooding points during the repair phase each turn.

When a vessel reaches zero flotation points it sinks.

The vessel also takes hull damage as if it had taken a hull hit.

Guns

Any penetrating shot disables one random gun and the vessel takes hull damage points (HDP) dependant upon the size of the round that hit.

Gun hits may be deflected by casemate armour if on a casemate vessel and port mounted, by turret armour if turret mounted or by hull armour if port mounted on other vessels. If deck mounted, armour may not deflect this hit.

Gun Port

The shot or shell passes through an open gunport. The gun is destroyed and the vessel also takes damage points, hull damage points if casemate or broadside, turret damage points if the struck gun is in a turret.

Determine which gun port randomly, with it only being possible to hit the ports exposed to the firer. Turret ports may be struck by any shot, as turrets were often rotated away from enemy to reload, exposing them to fire from all directions.

SHELL

If a shell passes through a port and detonates, 1d3 other guns are destroyed if in the same casemate or turret.

In vessels without gun ports treat this as a gun hit.

Hull

Any shots that penetrate are treated as Hull Damage Points (HDP).

Hull damage represents the accumulation of structural damage and loss of crew. This leads to a reduction in speed.

When HDP are reduced to 50% or less, its maximum speed is reduced by one level.

When HDP are reduced to 25% or less its maximum speed is reduced by two levels.

Hull damage cannot reduce a vessel's maximum speed below Slow unless all HDP are lost.

When a vessel's hull damage points are reduced to zero it will be dead in the water. Armour has no further effect and its remaining crew abandon ship.

Any hits in excess of HDP are counted as flooding points (see **flooding**).

For the purposes of victory conditions, the vessel is counted as destroyed.

Example: The USS Monitor has 4 HDP remaining and takes a penetrating hull hit from the Virginia's heavy rifle. This causes 6 points of damage. The Monitor's HDP are reduced to zero and she suffers 2 flooding points. Any further hits will cause further flooding.

Magazine Explodes

The vessel's magazine is struck and explodes, sinking the vessel immediately. The armour rating used for the deflection test is that of the hull. If the vessel's magazine has already flooded, treat this as a fire critical.

All vessels within 10cm of the exploding vessel have a fire test marker placed on them. Any vessel locked with an exploding vessel rolls 1d6 and on a 5 or 6 its magazine also explodes. If it does not, it takes 2d6 HDP and 1d6 Flooding Points.

If the vessel has no magazine (eg. it is unarmed), treat this as a **Boiler Explodes** hit

Machinery

If the hit penetrates then the Engine room is struck and the machinery damaged. Each time the machinery is hit, mark off one machinery box on the vessel's record sheet. Maximum speed is reduced by one level for each box marked off.

If the vessel struck is a side- or sternwheel vessel, or shallow or very shallow draught vessel roll 1d6, on a 5 or 6 the boiler explodes (see **Boiler Explodes**).

The struck vessel also takes ordinary hull damage.

If a machinery hit reduces a vessel's maximum speed to Immobile, it loses speed at one level per turn until immobile.

Paddle Wheel

This indicates a hit to the wheel of a paddle wheel driven vessel. If the wheel is under armour, roll for armour deflection, otherwise the round automatically penetrates.

If a hit penetrates, damage is taken to the paddlewheel. One WDP (Wheel Damage Point) is marked off for each point taken (a wheel may have 6 or 10 WDP depending upon size). If all WDPs are lost, the wheel is disabled and any remaining damage is applied to the Hull.

On a vessel with a single wheel, or where both wheels have been disabled the vessel loses forward power and decelerates at one speed level per turn until immobile. The wheel may not be repaired during a game.

On a sidewheel vessel where only one wheel is disabled, the vessel's maximum speed is reduced by one level, the vessel may not turn on the spot and turning away from the damaged side is at one manoeuvre level poorer.

Sidewheel vessels with one or more disabled wheels may not turn on the spot.

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Pilothouse

Use the Pilothouse armour when rolling for armour deflection.

If a vessel has two pilothouses, the nearest pilothouse to the firer is hit. If neither is nearer, roll 1d6. On a 1,2 or 3 the forward pilothouse is hit, on a 4,5 or 6 the aft is hit.

Unless the vessel is going astern, the forward pilothouse is assumed to be occupied, unless destroyed.

If the armour fails to deflect, and the pilothouse is occupied, roll 1d6, on a roll of 1 or 2 the Pilot is killed, on a 3 or 4 the Captain is killed, on a 5 both are killed and on a 6 the pilot house is destroyed, killing both the captain and the pilot.

If the pilothouse is damaged the vessel takes damage in addition to any other effects. If the pilothouse is turret mounted the damage is applied to TDP, else it is applied to HDP.

SHELL

If the shell penetrated and detonated, The Pilothouse is destroyed and the Pilot and Captain killed.

If the shell detonated but failed to penetrate roll 1d6, on a 5 the Pilot is killed, on a 6 the Captain is killed.

If the shell failed to detonate, treat as solid shot.

Example: The Virginia's critical hit to the Pilot House penetrated and so the Monitor rolls 1d6, getting a 3, killing the Captain. It must also take the appropriate hull damage. The Monitor must take a morale test at the end of the turn.

Pilot Killed

The vessel may only move in a straight line (although it may slow, speed up, stop and reverse as normal) until a 5 or more is rolled on a d6 with a cumulative +1 to the roll per turn after the first) for a new pilot to take charge. This roll is made in the repair phase at the end of each turn. This includes vessels with multiple pilothouses, as there would always be some delay in taking charge.

Captain Killed

The vessel's Captain is struck and killed. Mark the vessel's record sheet as CAPTAIN KILLED. A morale check is required at the end of the turn and the loss of the Captain will affect all subsequent morale checks even though another officer will take over as Captain.

Pilothouse Destroyed

If the pilothouse is destroyed, or both are destroyed on a vessel with two, the vessel may no longer steer and will reduce speed by one level per turn until halted. Once halted she must take a morale check, and, if she passes this she may move forward or aft only at up to half speed and must attempt to move away from the enemy.

Port Jammed

A shot or shell strikes a gun port. The port is jammed shut and the gun cannot be used until it is unjammed in a repair phase.

Determine which gun port randomly, with it only being possible to hit the ports exposed to the firer (except Monitors, where any port may be hit as turrets were often rotated away from the enemy during reloading, exposing them to fire from all directions).

An armour deflection test is made, using the armour appropriate for the location of the gun (casemate, turret or hull). If the hit penetrates, the vessel also takes hull (or turret) damage in addition to the port being jammed. If the hit fails to penetrate, then the port is jammed, but no damage is taken.

In vessels without gun ports treat this as a gun hit.

Rudder

If the rudder is armoured, use the hull armour of the hit vessel. If the round penetrates or the rudder cables are unarmoured then the vessel's rudder cables are damaged, jammed or snapped. Roll 1d10, on a result of 1-4 the vessel may only turn to starboard, on a result of 5-8 the vessel may only turn to port and on a roll of 9 or 10 the vessel may not turn at all.

EXCEPTION - Sidewheel Vessels

Sidewheel vessels may still turn, at one manoeuvre class poorer. This is cumulative with any wheel damage.

If the rudder was protected by armour and was damaged, the vessel takes hull damage as defined by the size of the gun, otherwise no other damage is taken.

EXCEPTION - Union Double-enders.

These vessels had rudders at both ends. When a rudder is destroyed, it is that nearest the firer. The rules for side wheel vessels then apply when moving in the opposite direction to that rudder.

Stack

The vessel's smokestack is struck. If the hit penetrates, the Stack Damage Points (SDP) are reduced by the amount indicated for the hit on table 17. When the SDP are reduced to zero, the stack is rendered useless. This causes a reduction in the updraught to the boilers, reducing engine power. The vessel's maximum speed is reduced by one level.

The vessel takes no damage other than to the stack.

If a destroyed stack is struck again, treat it as a casemate hit on a casemate vessel and a hull hit on all others.

Turret

If the hit penetrates, the damage is applied to turret damage points (TDP).

Turret damage points represent damage to armour (including starting bolts from the inside), damage to the rotating mechanism and gun mountings.

Each turret has 20 TDP (unless otherwise stated in the ship lists).

When a turret's damage points are reduced to zero the turret is destroyed and may no longer fire.

Turret Jams

If this hit is suffered by a non-turreted vessel, treat as a Machinery hit.

A hit damages the turret turning mechanism. The guns in that turret may only fire as fixed guns to either forward, port, starboard or aft, whichever is nearest to the direction in which it last fired. Which port or starboard arc is used is determined by the turret position,. A forward turret uses the forward port or starboard arc, a single or midships turret, the midship port or starboard arc etc.

Example: The Monitor is hit and suffers a Turret Jammed hit. It last fired at the Virginia to the port side. Its guns may now only fire in the fixed midship port arc.

Boarding

Boarding may only occur when two vessels are locked together or two vessels are in base contact and both immobile.

A vessel may only board if its orders for the turn include boarding.

The procedure for resolving boarding is as follows:

Roll on Table 18, using Current HDP.

If the vessel is a troop transport, count Double HDP for the purposes of boarding.

Table 18. Boarding Actions		Roll 2d6 and add Modifiers
Attacker's HDP > 3x Defender's HDP (not cumulative)		+3
Attacker's HDP > 2x Defender's HDP (not cumulative)		+2
Defender's HDP > 2 x Attacker's HDP (not cumulative)		-2
Defender's HDP > 3 x Attacker's HDP (not cumulative)		-3
Attacker is a special boarding party		+1
Per VL deck gun on defending vessel		-1
Defender is Ironclad		-3
Result		Total
Attacker is Repulsed losing 1d6 HDP.		4 or less
Attacker is Repulsed. Both sides lose 1d6 HDP		5-7
Stalemate, both sides lose 1d6 HDP and continue next turn unless attacker withdraws.		8-10
Defender defeated, but attempts to scuttle ship (see Morale Rules). Attacker captures ship		11-12
Defender Defeated. Attacker captures ship.		13+

If more than one vessel attempts to board the same target, add together the HDP of the attacking vessels.

On a roll of double 1 the attacking vessel's captain is killed. On a double 6 the defending vessel's captain is killed.

If a stalemate results, the action will continue next turn, unless the attacker withdraws.

Note: Special boarding parties are those prepared before the battle started and equipped specially for boarding with weapons such as grenades, as was planned against the *Monitor* after *Hampton Roads*.

Example: The Virginia has rammed the Monitor and locked. She attempts to board. She has 64 HDP left. The Monitor has suffered severe damage and has 31. The Virginia rolls 10 on Table 18, for a result of 9 (+1 for having double the HDP of the defender, -3 for attacking an ironclad). The attack is a stalemate. Both vessels roll for HDP loss. The Virginia gets a 3, the Monitor a 5. The action will continue next turn, unless the Virginia withdraws.

Morale

Morale checks are called for in turns where one or more of the following has occurred:

- Vessel is flooding.
- Vessel or Fort has lost at least ½ HDP or FDP and suffered damage this turn.
- Captain killed this turn.
- Under fire and Unable to return fire (unless vessel is unarmed).
- Vessel on fire.
- Friendly vessel seen sunk or surrendered this turn (before morale phase)

A Morale test is taken by rolling 2d6 and applying all the modifiers from Table 19 that apply to the turn in which the check is made. All modifiers are cumulative except where otherwise stated and loss of vessels/flagships that are continuous from turn to turn.

Table 19. Morale Test	
Cause (Roll 2d6. Fails on 2 or less)	Modifier
Vessel on fire	-2
Vessel flooding	-2
Captain killed this turn	-2
Captain killed in a previous turn	-1
Per enemy vessel seen sunk or surrendered	+1
Per friendly vessel seen sunk or surrendered	-1
Flagship seen surrendered or sunk	-1
½ to ¾ HDP/FDP taken	-1
over ¾ HDP/FDP taken	-2
Torpedo detonated in contact with vessel this turn	-2

If the modified roll is 12 or greater then the vessel must immediately move at full speed towards the nearest active enemy vessel and ram if it is capable, otherwise attack at as short a range as possible.

A modified result of 2 or less is a morale failure. The vessel's reaction then depends on its immediate circumstances.

Consult Table 20, comparing the testing vessel's conditions in order. The first reaction where the circumstances match is that used.

Table 20. Effect of a Failed Morale Test		
Fort or Gun Battery	At least ½ FDP remaining Less than ½ FDP remaining	Abandon Fort Surrender
Vessel Flooding	Roll 1d10. If roll is greater than current flotation points then abandon ship, else react as indicated by conditions below.	
Vessel On Fire		Abandon Ship
15cm or less from enemy	Under Fire or Unable to Move Not Under Fire	Surrender Retreat
More than 15cm from Enemy	Able to move Unable to Move	Retreat Abandon Ship and Scuttle

Example: The Monitor has been rammed by the Virginia and is flooding badly, so has one cause of morale test, (flooding this turn). The Monitor rolls 2d6 and gets 4. Normally this would be a pass, but there is a 2 modifier for flooding and so the test is failed. Consulting the result table, the vessel is less than 15cm from the enemy and under fire, but she is also flooding and this takes precedence. Rolling 1d10, she gets an 8. This is greater than the current flotation points and so the crew abandon ship. Had she passed, she would have surrendered, as the next condition to apply is 15cm or less from enemy and under fire.

Definitions of Morale Failure Results

Abandon Fort

30 **Smoke on the Water**

The defenders spike the guns and abandon the fort. The guns may not be re-used during the game.

Abandon Ship

The vessel will decelerate by 1 level per turn and make no attempt to avoid collisions or running aground.

Retreat

The vessel must move at maximum speed towards its own end of the table. It may not fire except to return fire at an enemy vessel that fires upon it and is between it and its own end of the table. It must make subsequent morale tests if required (for example, for flooding, fire or further damage). If it passes these tests it will continue to retreat. If a vessel that is retreating runs aground and has no enemy within 15cm it will scuttle, else it will surrender.

Scuttle

Treat as Abandon Ship, except that the vessel is set alight. Place a fire test counter on the vessel. It must test in the fire test phase.

Surrender

The vessel must decelerate at 1 level per turn and will cease fire. It must avoid collisions if possible and once coming to a halt will anchor and remain in place until either boarded or passing a subsequent morale test. It may re-test in any turn where it has neither been fired upon nor has any enemy vessel within 15cm. Any Vessel that has surrendered and passes a subsequent morale test must retreat.

Fortifications that surrender cease fire and may not fire again during the game.

Fire Test

Any vessel with a fire test counter on it, or still on fire from last turn, must take a fire test.

A Fire Test marker must be placed on a vessel in the following situations:

- Vessel or fort suffered a Fire critical.
- Vessel hit by red hot shot or detonating shell (which either penetrates or strikes cotton armour).
- Vessel within 10cm explodes.
- Gun explodes on vessel or fort.
- Vessel came into contact this turn with fire ship, fire raft or ship that is burning out of control.
- A vessel's orders included Scuttle Ship.

To test roll a 2d6 on Table 21.

Table 21. Fire Test		Roll 2d6 and add modifiers
Modifiers		
Has lost $\frac{1}{2}$ to $\frac{3}{4}$ HDP/FDP (Ignore if abandoned)		+1
Has lost over $\frac{3}{4}$ HDP/FDP (Ignore if abandoned)		+2
Vessel exploded in contact this turn		+3
Came into contact with fireship or Fire Raft this turn		+3
Vessel or fort has been abandoned and has not been boarded		+4
Per Fire Test Marker on vessel or fort		+1
Per previous consecutive turn on fire		+1
Tester is Fort		-2
Results	Effect	
2-9	Fire Extinguished	
10-14	Fire starts or continues to burn. If not on fire 1st turn, place an <i>On Fire</i> marker on the vessel. Vessel takes 1d3 HDP/FDP. Test again next turn	
15+	Fire burns out of control. Crew abandon ship/fort. Vessel drifts, taking 1d6 HDP per turn. Fort takes 1d6 FDP per turn. Each turn roll 1d10 with +1 cumulative for every turn after the first. On a modified result of 10 or more the magazine explodes. (See Hit Descriptions)	

If a vessel or fort burns out of control it will continue to burn, without further tests, until it either explodes or sinks due to damage (in the case of vessels). If it sinks before exploding, then it will not explode, the magazine assumed to be flooded.

Example: The New Ironsides has been hit by a spar torpedo, sustained a fire critical and so has one fire test marker. In the Fire Test Phase it must test. It rolls 2d6 and gets 8. This gives a 9 (+1 for the marker) so the fire catches, inflicts 1d3 damage and must be tested for again in the Fire Test Phase.

Four turns later, having not put out the fire, the New Ironsides rolls again, this time getting an 11, this gives a 15 (+4 for four previous consecutive turns on fire). The fire is now burning out of control. She takes a further d6 damage. A further d10 is rolled for the magazine, resulting in a 5. The magazine has not yet gone off. Each subsequent turn the New Ironsides must roll, exploding on a 9 or 10 next turn, 8, 9 or 10 the turn after and so on, until she explodes or sinks.

Once a test has been taken, any fire test markers on that vessel are removed.

Repair Phase

During the repair phase the crew may attempt to carry out a variety of repairs to the vessel.

The repairs must have been ordered in the orders phase of the current turn

Only one repair task may be attempted per turn, and a vessel on fire may make no attempts at repair until the turn after the fire is out.

the repairs possible are:

- Unjam Guns
- Repair Rudder
- Unjam Gun Ports
- Repair Machinery
- Reduce Flooding

Note: Turrets may not be unjammed during action.

Unjam Gun Ports

Gun ports that have been jammed due to a critical may be unjammed as a repair action. To unjam a port, roll 1d6 during the repair phase. The port is unjammed and may be used as normal on a 5 or 6. If any repair attempt roll is a 1 then the damage is irreparable without the services of a dockyard.

Example: The CSS Tennessee suffers a Gun Port Jammed critical and attempts to repair it in the repair phase. The first roll is a 1 and the port is now permanently jammed

Repair A Rudder Hit

A damaged rudder cable may be repaired by a roll of 5 or 6 on a d6. If any rudder repair attempt roll is a 1 then the damage is irreparable without the services of a dockyard.

Unjamming Guns

Guns that have jammed due to a misfire may be unjammed as a repair action. To unjam a gun, roll 1d6 during the repair phase. The gun is unjammed and may be used as normal on a 5 or 6. If any repair attempt roll is a 1 then the damage is irreparable without the services of a dockyard.

Example: The CSS Tennessee suffers a Gun Jammed Misfire and attempts to repair it in the repair phase. The first roll is a 5 and the gun may be fired again next turn.

Repairing Machinery

If a vessel has not lost all its machinery points, it may attempt to repair any damage taken. To repair machinery, roll 1d6 during the repair phase. On a 5 or 6 machinery box is repaired. If any repair attempt roll is a 1 then the damage is irreparable without the services of a dockyard.

If a vessel has lost all its machinery boxes, no repairs may be made.

Flooding

During each repair phase, the vessels current flotation points should be reduced by the current flooding points.

The vessel may then attempt to reduce flooding. This may only be done if the vessel is moving at Slow or less, is not on fire, and does not attempt any other repairs that phase

The vessel rolls 1d6, and on a 5 or 6, the flooding is reduced by 1d3 points.

Once flooding has been reduced to zero, a vessel regains 1 flotation point per turn, unless abandoned.

Example: The Monitor is flooding at 2 points per turn and attempt to reduce flooding. First it loses 2 flotation points due to current flooding. The player then rolls 1d6, getting a 5, a success! Rolling 1d3 gives a 1, reducing the flooding by 1 point to 1. Next turn it will only lose 1 flotation point and may attempt to reduce the flooding further.

Ending An Engagement

Engagements are ended when at the end of a turn all vessels and fortifications of one side have each done any one of the following:

- Withdrawn off the playing area towards their own lines.
- Struck their colours and surrendered.
- Sunk or been abandoned.
- Been captured.

or a prearranged set of conditions is reached in a scenario game.

A player has the option to withdraw his force at any time. This may be a sensible option in a campaign where retaining a viable fleet is more important than winning a battle.

The winner of an engagement is the one who retains control of the table by having at least one vessel or fortification operational that has not surrendered or, in a scenario game, the first player to achieve his objectives.

Torpedoes

These were large explosive charges designed to explode in contact with the target vessel. There were three basic types:

- Spar Torpedoes

These were mounted on a spar on the bows of a ship. The vessel brought the charge into contact by ramming the enemy vessel. These charges were often fitted to small torpedo boats.

- Fixed Torpedoes

These were what are now called mines. They were anchored or fixed to the riverbed and detonated when a ship passed over, either by remote control, or by contact with fuses on the torpedo casing.

- Drifting Torpedoes

These were similar in design to fixed torpedoes but were allowed to float downstream in the hope of contacting an enemy vessel where contact fuses would detonate them.

For both fixed and floating torpedoes there was a wide variety of methods by which they could be detonated. These rules divide them into two classes, contact and remote. Contact detonate when a vessel passes over them and remote detonate when the controlling player wishes.

Spar Torpedoes

To use a spar torpedo, the vessel making the attack must bring its bow into contact with the enemy hull. If a collision occurs with the torpedo equipped vessel's bows contacting the enemy, a roll is made on Table 22 before collision damage is tested for. If the torpedo detonates, roll on Table 26.

Table 22. Spar Torpedo Attacks		Base Chance 5 or less on 1d10
Collision Speed		
Medium		-1
Fast		-2
Very Fast		-4
Collision Arc of Target Vessel		
Broadside		+1
Bow		-2
Stern		-1
Target Immobile		+2

Example: The CSS Atlanta, armed with a Heavy Spar Torpedo, collides bows on with the Nahant's Broadside. The Atlanta is moving at Slow. This gives a chance of detonation of 6 (5, +1 for broadside on). A 4 is rolled and the torpedo detonates. The Confederate player rolls 2d6 on Table 26, getting 6 for a total of 8 (+2 for Heavy Torpedo). The Nahant takes 2d6 HDP, getting a 4, and 1d3 Flooding, getting a 2. The collision between the two vessels must now be resolved.

Fixed Torpedoes (Remote Detonated)

These can be handled in two ways:

If a referee is used, the player controlling the torpedoes marks their position on a map.

If no referee is used, place a number of markers on the table, with at least two dummy markers for each real one. A record should be kept of which markers are real and which are dummy.

Each torpedo covers an area 5cm by 5cm.

At the end of the movement phase the controlling player may declare that he is detonating the torpedo. A remote torpedo detonation test is made on Table 23 and if a vessel is in contact with the marker (or within the 5cm square as decided by the referee), it takes damage as indicated on Table 26.

Table 23. Remote Torpedo Detonation		Base Chance 5 or less on 1d10
Year	Modifier	
1861-1862	-1	
1863-1864	0	
1865	+1	

If a torpedo fails to detonate, a further two attempts may be made after movement in subsequent turns. After this the torpedo is useless and no further attempt may be made to detonate it.

Example: The USS Ironsides is anchored over a Super Heavy remote detonated torpedo. The Confederate player attempts to detonate the torpedo. It is 1864, so the torpedo has a chance of 5 or less to detonate. A 6 is rolled and it fails. Next turn the Confederate player tries again, getting a 7. On the third attempt in the following turn a 9 is rolled. The torpedo does not detonate and no further attempts may be made. Maybe the wires were broken!

Fixed Torpedoes (Contact Detonated)

These are marked in the same way as remote controlled torpedoes, but a test is made by the controlling player whenever a vessel passes over the area. The test is made on Table 24. This test is made whenever a vessel's base contacts the area, even if previous tests have been made by this or other vessels. Previous tests reduce the chance of detonation, but there will always be a 1 in 10 chance of detonation.

Table 24. Fixed Torpedo Detonation		Base Chance 5 or less on 1d10
Year	Modifier	
1861-1862	-1	
1863-1864	0	
1865	+1	
Very Shallow Draft	-2	
Shallow Draft	-1	
Deep Draft	+1	
Per Previous test for this area (cumulative)	-1	

Example: It is 1864 and the USS Tecumseh passes through a fixed contact torpedo area. The torpedo is Heavy. There are no modifiers, giving a chance of 5 or less. A 4 is rolled and the torpedo detonates. 2d6 are rolled for damage on Table 26, getting a 12. With the +2 modifier for a Heavy torpedo and a -1 for a Large Vessel, this gives a 14, breaking the Tecumseh's back, sinking her instantly.

Drifting Torpedoes

These were torpedoes, usually fitted with contact detonators, which were allowed to float downstream, in the hope of contacting the hull of an enemy vessel.

These are represented by a counter 5cm x 5cm.

Floating torpedoes may only be used by the player who is upstream (see Drifting rules). The optional rule for drifting MUST be used.

To simulate this, place floating torpedo markers at the upstream end of the table, on either side of the river. Each turn move the counters downstream as if drifting with the current. Whenever a vessel touches a counter, roll on Table 25.

Table 25. Floating Torpedo Detonation		Base chance 5 or less on 1d10
Year	Modifier	
1861-1862	-3	
1863-1864	-1	
1865	0	

Example: It is 1861 and the USS Minnesota is struck by a Medium floating torpedo. Consulting Table 25 gives a chance of 2 or less of detonating (5, -3 for the year, 1861). A 1 is rolled and the torpedo detonates. Rolling on Table 26 gives a result of 4, which has no effect.

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Whenever a vessel detonates a torpedo, roll on Table 26.

Table 26. Torpedo Damage		Roll 2d6 and add modifiers
Light Torpedo		-2
Heavy Torpedo		+2
Super Heavy Torpedo		+4
Contact Torpedo against vessel with mine catcher		-4
Result		Total
No Effect		2 or less
1d6 HDP, No Flooding		3 - 5
2d6 HDP, 1d3 Flooding		6 - 8
3d6 HDP, 1d6 Flooding		9 - 13
Vessel's Back Broken, Sinks Instantly		14+

Forts and Batteries

These played an important part in the war on the rivers, usually in Confederate hands.

Forts and batteries (hereafter referred to simply as forts) use the same rules as ships with a few exceptions as follows:

- Forts use Fort Damage Points (FDP) instead of Hull Damage Points. These work in exactly the same way, with the fort being rendered inactive by losing all its points.
- Guns fired from forts use the same arc as fixed, gunport mounted guns aboard ships, unless the are mounted to fire from more than one face of the fort, in which case they use same arc, but from both faces of the fort.
- Shots fired at forts use the Forts and Batteries Hit Location Table (Table 27).
- Howitzer and Mortar shells fired at forts count as undetonated for damage purposes, even if they detonate (The shells exploded on or above ground, doing little damage). If the shells detonate they still count towards suppression.
- Targetting size is based on the size of the fort in the same manner as ships.
- All firing against a fort in a turn is carried out before the fort may return fire and the fort must test for suppression before firing.

Table 27. Fort Hit Locations	
Roll (1d10)	Location
1	Gun
2	Gun
3	Structure
4	Structure
5	Structure
6	Structure
7	Structure
8	Structure
9	Structure
10	Critical

CRITICAL HITS

A 10 on the hit location roll indicates a critical in the same manner as for ships. If a 10 is rolled, roll 1d6 on Table 28 for the type inflicted.

Table 28. Fort Criticals			
Roll	Critical	Special (1d6)	Critical
1	Flagstaff	1	Gun Explodes
2	Fire	2	Gun Explodes
3	Fire	3	Commander Killed
4	Embrasure	4	Commander Killed
5	Embrasure	5	Magazine Collapses
6	Special	6	Magazine Explodes

ARMOUR DEFLECTION

Forts have only one armour location. All hits, unless otherwise specified, are rolled for on Table 29.

Table 29. Fort Armour Deflection Table				
Gun Size	Masonry or Brick Forts		Sand or Earth Forts	
	Solid Shot	Shell	Solid Shot	Shell
Very Light	10	8	8	10
Light	9	7	7	9
Medium	8	6	6	8
Heavy	7	5	5	7
Super Heavy	6	4	4	6
Modifiers for Range (Solid Shot Only)				
Range	Modifier			
Extreme	+3			
Long	+1			
Short	-1			
Point Blank	-2			

Successful deflections do not necessarily indicate that a hit is deflected, simply that the fort suffers no damage.

SUPPRESSION

In addition to attempting to destroy forts, gunfire was also used to stop the troops from manning the guns. This is referred to as suppression.

Each turn, the fort accumulates suppression points (SP) depending upon the number of times it is hit that turn. Points are accumulated as given in Table 30.

Table 30. Suppression Points		
Gun Size	Solid Shot or Undetonated Shell	Detonated Shell
V.Light	½	1
Light	1	2
Medium	1	2
Heavy	2	3
Super Heavy	2	4

Compare the total SP with Table 31 to determine the chance of suppression. To suppress the fort, roll this number or less on 1d10.

Table 31. Suppression		Roll Target Number or less on 1d10 to Suppress						
Suppression	Remaining FDP							
Points	1-20	21-50	51-75	76-100	101-150	151-200	201-500	501+
1-5	6	1	0	0	0	0	0	0
6-10	8	5	2	1	0	0	0	0
11-20	9	7	6	5	2	1	0	0
21-30	9	8	7	6	5	3	0	0
31-40	9	8	8	7	6	5	0	0
41-50	9	9	8	8	7	6	1	0
51+	9	9	8	8	7	6	1	1

If a fort is suppressed, it may not fire any exposed guns that turn. Guns protected by complete overhead cover, such as many of those in *Fort Sumter*, cannot be suppressed.

SPs are calculated each turn and are not carried over from one turn to the next.

HIT DESCRIPTIONS

Flagstaff

A shot strikes the fort's flagstaff, destroying it. This has no effect upon the fort. It was a common target for gunners, and they often had to be ordered not to fire at it! No damage is taken.

Fire

No deflection roll is made. A fire test marker is placed on the fort and it must take a fire test in the fire test phase, using the same table as a ship. The fort also loses the normal amount of SDPs.

Embrasure

This is the equivalent of a gun port hit. A gun is destroyed without a deflection test. The fort loses the normal amount of SDPs.

Gun

If the hit is not deflected, a gun is destroyed. Normal TDPs are inflicted.

Gun Explodes

The hit ignites shells or powder stored by a gun, destroying it. The fort also suffers a d10 extra damage due to the explosion in addition to normal damage.

Commander Killed

This has the same effect as the Captain being killed on a ship. The fort suffers normal FDPs.

Magazine Collapses

The shot collapses the magazine. The fort may fire its guns this turn. No guns may be fired after the end of this turn.

Magazine Explodes

The fort is completely destroyed by the explosion.

Structure

A fort has 20 FDP points per gun. When it has lost all its points, it is out of action. This does not indicate that the fort is destroyed, simply that it is unusable until repaired. The loss of FDPs affects morale in the same way as HDP do for ships.

A Confederate earth walled battery of 4 guns (80 FDP) is fired upon by the USS New Ironsides, using solid shot at Long Range. Four of the New Ironsides' HSBs hit the battery. The hit location rolls give a 5, a 7, a 10 and a 2, giving two structure hits, a critical and a gun hit. A 2 is rolled for the critical, giving a fire. A fire test marker is placed on the battery. The deflection chance is 7 (5, +2 for long range). The Confederate player rolls a 2, an 8 and a 9 (the fire does not require a deflection test). This indicates that the first structure hit is deflected, but the others are not. The battery loses 1 gun (rolled for randomly) and 18 SDP. A fire test must also be made in the fire test phase.

The fort must also test for suppression before returning fire. The fort is struck by 4 Heavy solid shot. This gives 8 SP. The fort has 80 FDP, minus the 18 it lost this turn, giving 62. This gives a Target Number of 2 or less. The Union player rolls a 1 and suppresses the fort so it may not return fire this turn.

Optional Rules

Drifting

When using this optional rule, the direction of flow of the river must be established (if the engagement is not on a river, this rule should not be used). This may be decided by historical setting, campaign events, or by a random method as shown below.

Roll 1d6, on a 4, 5 or 6 the current is strong enough to affect vessel's movement.

If there is a current roll 1d6. On a 1-4 the flow is from the Confederate end toward the Union end. On a 5 or 6 it is from the Union end toward the Confederate end.

If there is a current, at the end of the movement phase of each turn, all vessels (unless anchored or aground) and all drifting torpedoes, fire rafts etc. are moved downstream as if they were travelling at Slow speed (10cm) in that direction.

If an object or vessel contacts another or runs aground during drifting, the appropriate test must be made, calculating collision speed in the same manner as normal, counting any stationary object as moving at slow in the opposite direction to the current.

Example: During setup, a roll was made for current. The first d6 was a 5 so the current is strong enough to have an effect., The second roll was a 3, indicating that the flow is towards the Union table edge. At the end of each movement phase, all vessels not anchored or aground will move 10cm towards the Union table edge.

Rate of Fire

For greater realism the rate of fire given in Table O1 may be used. This is not included in the basic rules as it makes for more paperwork.

Table O1. Rate of Fire		
Gun Size	RoF (Turreted)	RoF (Others)
Very Light	1	1
Light	1	1
Medium	1 per 2	1 per 2
Heavy	1 per 5	1 per 3
Super Heavy	1 per 8	1 per 5

Example: The USS Tecumseh fires its SHSB guns (turreted) in turn 2. If using the Rate of Fire rules it may fire again in turn 10 as Turreted SHSB guns may fire once every 8 turns.

Towing

To tow another vessel, a vessel must first pass a towing line across. This is not necessary if a vessel begins a game under tow.

To pass a line across, the towing vessel's stern (or bow if towing by the bow) must remain within 5cm of the bow (or stern if towing astern) of the vessel to be towed for two full turns. If the vessels are not under fire then a line is passed successfully and the vessel may take the other under tow. If either vessel is being fired upon, roll 1d6 at the end of the second turn. On a 4, 5 or 6 the line is passed, otherwise another attempt must be made at the end of the next turn.

When towing, use the total HDP of the vessels excluding any damage taken. If more than one vessel is towing or being towed, add together the HDPs of the vessels.

The towing vessel's maximum speed is affected as indicated by Table O2. If more than one vessel is towing, use the maximum speed of the slower vessel, unless it is very small, or two or more sizes smaller than the faster vessel.

If the maximum towing speed is reduced below Slow, then it is incapable of towing a vessel of that size, unless the vessel can assist using its own power.

Table O2 Towing					
Total HDP of Towing Vessel	Total HDP of Vessel/s under Tow				
	1-10	10-29	30-49	50-69	70+
1-9	Max-1	Max-3	-	-	-
10-29	Max	Max-2	Max-2	Max-2	Max-3
30-49	Max	Max-1	Max-2	Max-2	Max-2
50-69	Max	Max	Max-1	Max-2	Max-2
70+	Max	Max	Max-1	Max-1	Max-2

If the vessel being towed can still move under its own power, the towing vessel's maximum speed is increased by one level for each level of speed that the towed vessel can achieve on her own, up to the average of the two vessels.

NOTE: If attempting to tow a vessel astern, use the maximum speed astern for that vessel.

If a vessel attempts to tow another free after grounding, a test is made for breaking free from grounding, using the maximum speed of the towing vessel.

When moving a towing vessel, it moves and turns as normal. The vessel being towed moves and turns the minimum amount so as to keep its bow (or stern if moving astern) within 5cm of the towing vessel's stern (or bow if towing by the bow).

Vessels attached sidebyside, as used at Mobile Bay, are treated as towing vessels, for speed, with the faster vessel counting as towing. Their manoeuvrability is that of the more manoeuvrable vessel, or one level better than that of the poorer, whichever is lower.

Example: The USS Nahant (46 HDP) has become permanently aground and is under fire from a Confederate battery. The USS Sassacus (36 HDP) moves its stern to within 5cm of the stern of the Nahant and attempts to pass a line across.

At the end of the second turn the Union player rolls 1d6, getting a 3, the attempt failed. He tries again at the end of the following turn, getting a 5 and successfully passes a line across.

The Union player may make an attempt to break free during the appropriate phase of the next turn.

The maximum speed of the Sassacus is now Fast (Her normal maximum is V.Fast, but this is reduced by two levels to Medium for towing and increased to Fast because the Nahant's engines still work and she can go at up to Medium astern, giving an average of the two vessel's maximum speeds of Fast). This gives the Nahant a chance of 5 to break free. The player rolls a 4 and the Nahant is free.

If the Sassacus continues to tow the Nahant, she will move at Fast.

Example 2: The CSS Louisiana (82 HDP) is being towed up river by two tugs (16 HDP each, giving them a total of 32 HDP). The tugs normally have a maximum speed of Fast. Their maximum speed whilst towing is Medium (their speed is reduced by two levels to Slow, and the Louisiana's max speed of slow increases this to Medium).

Example 3: The USS Hartford is lashed alongside the Metacomet. The Hartford has 50 HDP and a maximum speed of Very Fast, the metacomet has 36 HDP and a maximum speed of Very Fast. As they both have the same maximum speed, this remains their maximum speed while lashed together.

The Hartford has Medium manoeuvrability and the Metacomet Very Good, this means that they will manoeuvre as if a Good manoeuvrability vessel.

Special Vessel Configurations

Some vessels had unusual configuration, and so use special hit location tables. There are two particular configurations, the tables for which are given below. These are the *CSS Stonewall*, a vessel with a forward casemate and an aft turret, and the vessels with separate structures forward and aft such as the double casemate vessels *USS Keokuk*, *CSS Wilmington* and the double turreted Laird Rams. Treat Forward or Aft Structure as Casemate or Turret as appropriate.

Another Special configuration was the *USS Osage*, having a forward turret and paddlewheels aft. This configuration should be treated as a Double Turreted Monitor, counting hits to the aft turret as hits to the paddlewheel.

Table O3 Special Configuration Hit Locations					Roll 1d10	Note: a 10 indicates a critical hit (see table 14)				
CSS Stonewall					Double Structure Vessels					
Roll	Bow	Broadside	Stern	Plunging	Roll	Bow	Broadside	Stern	Plunging	
1	Hull	Hull	Hull	Casemate	1	Hull	Hull	Hull	F.Structure	
2	Gun	Hull	Hull	Casemate	2	Hull	Hull	Hull	F.Structure	
3	Casemate	Casemate	Hull	Deck	3	Hull	F.Structure	Hull	Deck	
4	Casemate	Casemate	Gun	Deck	4	Gun	F.Structure	Gun	Deck	
5	Casemate	Gun	Turret	Deck	5	F.Structure	Gun	A.Structure	Deck	
6	Casemate	Turret	Turret	Deck	6	F.Structure	A.Structure	A.Structure	Deck	
7	Casemate	Turret	Turret	Deck	7	F.Structure	A.Structure	A.Structure	Deck	
8	Stack	Stack	Stack	Turret	8	Stack	Stack	Stack	A.Structure	
9	Stack	Stack	Stack	Turret	9	Stack	Stack	Stack	A.Structure	

Vessel Design

CONFIGURATION

All vessels used in the game will have a set configuration. The configuration determines which hit location template (see Aiming and Firing) is used. The possible configurations are:

Casemate

The most common configuration for Confederate ironclads. Casemate vessels usually consisted of a hull cut down almost to the waterline with an armoured box on top containing the guns. Some were driven by screws, others by internal paddlewheels. Examples of this type on the Confederate side were the *Virginia*, *Albemarle*, *Tennessee* and *Atlanta* and on the Union side the *Cairo* and *Essex*.

Monitor

The best known of the Union ironclad types. Monitors consisted of a completely ironclad hull with very low freeboard surmounted by one or more heavily armoured rotating turrets, usually containing two large calibre guns. Only the Union built monitors, examples are the USS *Monitor*, the *Passaic* and *Canonicus* classes of single turret monitors, the USS *Onondaga* and *Miantonomoh* class double turret monitors and the triple turreted USS *Roanoke*. Monitors tended to perform poorly in ramming attacks as their bows were weakened by their having their anchoring system internally in the bows.

Conventional

Conventional vessels fall into the traditional "wooden wall" pattern, slab sided ships with their guns firing in broadside. These tended to be wooden although the USS *New Ironsides* was a steam driven ironclad of a very powerful design. Most Confederate examples of this type would have been combined steam and sail powered vessels, blockade runners and commerce raiders such as the *Alabama*, *Florida* and *Shenandoah*.

Sidewheel

These are similar to the conventional pattern but, rather than being powered by sails or steam driven screws they have a paddlewheel on each side. Vessels of this type were usually used as unarmoured gunboats. Examples include the Confederate's *Selma* and the Union *Sassacus* class.

Sternwheel

This is the archetypal Mississippi riverboat. A flat bottomed, shallow draught vessel powered by a single large paddlewheel at the stern. Examples include the Union *Signal* and *Nymphe*.

Special

Some vessels did not fit into any of these classes. These are grouped in a class of their own. For hull damage points and size, treat them as conventional vessels. Each vessel will have its own special hit location table. Example of this type include the CSS *Stonewall* which was a conventional ocean going vessel with a casemate and a turret.

For details of hit locations see **Optional Rules**.

Example 1: The CSS Virginia is a casemate vessel.

Example 2: The USS Monitor is a Single Turret Monitor

DAMAGE POINTS**Hull Damage Points**

The base number of Hull Damage Points (HDP) should be worked out as follows, all measurements are in feet.

Multiply the Length by the Beam and divide by 200. Round to the nearest whole number.

When calculating the HDP of sidewheel vessels, use the beam across the hull, not the paddles, as this will give an artificially high figure.

$$HDP = \frac{Length \times Beam}{200}$$

Example 1: The Virginia has a length of 275' and a beam of 51'. This gives a HDP value of 70.

Example 2: The Monitor has a length of 179' and a beam of 42'. This gives a HDP value of 37.

Turret Damage Points

44 Smoke on the Water

Each turret on conventional monitors and other turreted vessels has 20 TDP.

Those vessels whose turrets were significantly larger such as the *USS Dictator*, have 30 TDP

Example 1. The Virginia has no turrets, so TDP are not required.

Example 2. The Monitor has one turret. This has 20 TDP.

Stack Damage Points

The number of Stack Damage Points (SDP) is based upon the number of stacks the vessel has. Vessels with one stack have 10 SDP, vessels with two have 15 SDP.

Example 1. The Virginia has a single stack, so has 10 SDP.

Example 2. The Monitor, having no stacks, has no SDP. It cannot suffer stack hits. Any stack hit on the Monitor is treated as a hull hit.

Wheel Damage Points

Side wheels of standard size, such as those on the *USS Sassacus* and *CSS Govenor Moore* have 6 WDP each.

Stern wheels and very large side wheels, such as those of the Confederate Ironclad *Nashville*, have 10 WDP each.

Example: Neither vessel has paddlewheels, so WDP are not required.

SIZE

There are two size categories for each vessel, these being vessel size and targetting size.

Vessel Size

This is the physical size of the vessel and affects damage during ramming, turning rate etc.

It is calculated by comparing the vessel's HDP to Table D1. below.

Table D1. Vessel Size	
Category	HDP
Very Small	less than 10
Small	10-29
Medium	30-49
Large	50-69
Very Large	70 or more

Example 1. The Virginia has 70 HDP, this makes her Very Large.

Example 2. The Monitor has 37 HDP, making her a Medium sized vessel.

Targetting Size

Targetting size is split between a value for the vessel's bow or stern aspect and it's side aspect. The size is designated by a letter between A and F. This is written as x/y, where x is the bow/stern size and y is the broadside size. To calculate the size for a particular aspect, compare the width, in feet, of that face with Table D2. Round all measurements to the nearest foot.

Exception - Monitors.

All monitors count as B for bow/stern aspect. Single Turret Monitors count as B for side aspect, double and triple turreted as C.

Table D2. Targetting Size	
Category	Size
A	Less than 10' across
B	10' to 40' across
C	41' to 80' across
D	81' to 160' across
E	161' to 240' across
F	Greater than 240' across

Example 1. The Virginia has a length of 275' and, a beam of 51'. This makes her Targetting Size C/F.

Example 2. The Monitor is a Single Turret Monitor, so has a Targetting Size of B/B.

FLOTATION POINTS

These control how quickly a vessel will sink due to flooding. They are calculated by dividing the vessel's HDP by 5 if a monitor, or by 4 if not, and rounding to the nearest whole number.

Example 1. The Virginia has 72 HDP, giving her 18 Flotation Points.

Example 2. The Monitor has 36 HDP, giving her 7 Flotation Points

DRAUGHT

For the purposes of determining whether a vessel runs aground its draught needs to be determined.

Vessels will fall into one of four categories. Compare the vessel's draught in feet (rounding to the nearest foot) with Table D3. to find the draught category.

Table D3. Draught	
Category	Draught
Very Shallow	Less than 4'
Shallow	4' to 8'
Medium	9'-12'
Deep	13' or greater

Example 1. The Virginia has a Draught of 22', this makes her a Deep Draught Vessel.

Example 2. The Monitor has a Draught of 10.5', making her a Medium Draught vessel.

SPEED

For the sake of speed and simplicity all vessel movements are placed in one of four categories As Indicated by Table D4.

Table D4. Speed	
Category	Speed (knots)
Slow	1-3
Medium	4-6
Fast	7-9
Very Fast	10+

Example: Both vessels have a maximum speed of 6 knots, making their speed Medium.

MANOEUVRABILITY

This is based on the vessels size. With all except sidewheel vessels, compare the vessel size to Table D5 to determine the Manoeuvrability. Sidewheel vessels are one manoeuvrability class better than indicated by their size. eg. a Large Sidewheel vessel is Good Manoeuvrability.

Table D5. Manoeuvrability	
Size	Category
Very Small	Very Good
Small	Good
Medium	Average
Large	Average
Very Large	Poor

Example 1. The Virginia is Very Large, so counts as Poor for manoeuvrability.

Example 2. The Monitor is Medium, so has a manoeuvrability rating of Average.

ARMOUR

A vessel may have different armour ratings for different hit locations, as determined from it's hit location template. Armour ratings are applied to each hit location and are derived from the thickness of the metal armour, the thickness of any wooden backing and any modifier for sloped armour.

Divide the thickness of any wooden backing by 12 to derive an equivalent thickness of iron armour.

Add the thickness of iron armour to the equivalent thickness of the backing. If the armour is over three inches thick, and made in a single layer such as on the New Ironsides, multiply the effective thickness by 1½.

Factor in any multipliers for sloped armour from Table D6 to find the effective thickness. Round fractions to the nearest inch.

Table D6. Armour Slope Effect	
Slope (from Vertical)	Multiplier
0-22.4°	1
22.5-45°	1.25
46-60°	1.5
over 60°	2

Compare the effective thickness against Table D7. to find the actual armour rating for each location.

Table D7. Armour Rating	
Effective Thickness	Rating
less than 1"	Tinclad
1"-2"	Light
3"-5"	Medium
6"-8"	Heavy
9" or more	Super Heavy

Example 1: The Virginia's Casemate has 4" of iron over 24" of wood, giving a total of 6" of armour. It is inclined at 35 degrees to the vertical. This gives a multiplier of 1.25, giving a total effective thickness of 8". The means that the casemate has an armour rating of Heavy.

Example 2: The Monitor has 8" of vertical armour on the turret. This has no backing and no slope, so the armour is rated as heavy.

Note: Rudder armour is the same as that of the hull if the rudder chains run inside the hull. If they run across the deck, the rudder counts as Unarmoured.

Vessel with *Timberclad* armour are treated as *Cottonclad*.

GUNS

Guns are defined by a variety of factors, including their size, facing, mounting etc. These factors are given on Table D8. This gives a gun an abbreviated description. This description contains all the information required for the game.

Table D8. Gun Definitions						
Facing						
F	Forward					
FP	Forward Port					
FS	Forward Starboard					
M	Midships					
MP	Midships Port					
MS	Midships Starboard					
AP	Aft Port					
AS	Aft Starboard					
A	Aft					
	Location					
	G	Armoured or Behind Gunport				
	D	Deck Mounted				
		Mounting				
		5	5 Port-Pivot			
		F	Fixed			
		P	Pivot			
		Q	Quarter-Pivot			
		R	Restricted Arc Pivot			
		S	Semi-Pivot			
		T	Turret			
					Size	
					VL	Very Light
	L				Light	
	M				Medium	
	H				Heavy	
	SH				Super Heavy	
					Type	
					SB	Smooth-Bore
					R	Rifle
					C	Columbiad
		H	Howitzer			
	M	Mortar				
F	G	R	-	H	R	

Facing

This indicates which direction the gun mounting faces. A vessel is divided up into Forward (guns firing over the bow) and Aft (gun firing over the stern), and two broadsides, each being further divided into three sections, Forward, Midships and Aft. Pivots capable of firing to bow or stern are defined as Forward or Aft respectively. A vessel's broadside guns are divided between the three broadside positions depending upon their position on the vessel. Pivots only capable of firing to either bow or stern (Quarter-Pivots) and one broadside are defined as either Forward Port (or Starboard) or Aft Port (or Starboard) respectively.

Location

A gun's location defined whether it is mounted behind a gun port, such as on casemate vessels and turret mounted guns or deck mounted. Deck mounted guns include all guns fired through lowerable bulwarks.

Mounting

A gun may be fitted on a variety of mountings, these are as follows:

5-Port Pivot	These are pivots that cover both broadsides and either bow or stern, but have five ports, allowing the gun to be fired to the vessels quarters as well, giving a wide arc of fire. Examples include the <i>CSS Neuse</i> .
Fixed	Fixed guns are those that are only capable of firing through one gun port (unless turret mounted) or are deck mounted and only capable of firing to one broadside. Examples include the gun on the <i>CSS Manassas</i> , the 9" smoothbores on the <i>CSS Virginia</i> and the small broadside guns on the Union Double-enders.
Pivot	Guns mounted on pivots and capable of firing to both broadsides and either bow or stern fit into this category, unless mounted behind gunports and capable of firing to the vessel's quarters (see 5-Port Pivots). Some Pivots mounted on vessel capable of sail are not included in this category, as their guns are restricted in their arcs of fire by rigging (these guns are classed as Semi-Pivots). Examples include the 7" Rifles on the <i>CSS Tennessee</i> , the 32lb Smoothbores on the <i>CSS Genral Bragg</i> and the stern rifle of the <i>USS New Ironsides</i> .
Quarter-Pivot	Pivot guns which are only capable of firing to one broadside and either bow or stern are classed as Quarter-Pivots. Examples include the Pivots on the <i>CSS Columbia</i> .
Restricted-Pivot	These are guns mounted behind gun ports, where, instead of having a port facing to either broadside, they are positioned on the vessel's quarters. Examples include the bow and stern pivots of the <i>CSS Virginia</i> .
Semi-pivot	Guns mounted on pivots so as to be able to bear to either broadside are classed as Semi-pivots. Examples include the Rifle of the <i>CSS Alabama</i> , the Heavy Smoothbores of the <i>USS Kearsage</i> and the bow pivot of the <i>USS New Ironsides</i> (due to the rigging obscuring the bow arc).
Turret	Any gun mounted inside a fully rotating turret are classified as turret mounted. Some turret mounted guns may be classified differently, due to having a limited arc of fire (such as the Laird rams, which count as semi-pivots). Examples of Turrets include all the classes of Monitor.

Size and Type

These are determined by comparing the gun with Table D9. Guns are divided into three basic categories; smoothbore, rifled and columbiads. They are then further subdivided into five size categories according to weight of shot. This is determined as shown on Table D9. Howitzers and Mortars are calculated in the same way as smoothbore guns.

Table D9. Guns				
Size Category	Weight of Shot	Calibre (Smooth Bore)	Calibre (Rifled)	Calibre (Columbiad)
Very Light	up to 12lbs	up to 4.9"	up to 3.5"	-
Light	13-63lbs	5"-7.5"	3.6"-6"	-
Medium	64-100lbs	7.6"-9.5"	6.1"-6.4"	-
Heavy	101-200lbs	9.6"-13"	6.5"-9"	15" or less
Super Heavy	over 200lbs	over 13"	over 9"	over 15"

Example 1. The Virginia's bow gun is a 7" Rifle, pivot mounted, behind an armoured gunport, with one port facing forward and one on each quarter. This makes it a Forward Restricted Armoured arc pivot Heavy Rifle, giving an abbreviation of FGR-HR. The 6 broadside 9" Dahlgren smoothbores and two 6" rifles are fixed behind armoured gunports. These are classified as 1xFPGF-MSB, 1xFSGF-MSB, 2xMPGF-MSB and 2xMSGF-MSB. The 6.4" Rifles count as APGF-MR and ASGF-MR. The two deck mounted 12lb Howitzers are classified as MDS-VLH.

Example 2. The Monitors guns are two 11" Dahlgren Smoothbores, mounted behind gunports in the turret. These are classified as Midships, Armoured, Turret mounted Heavy Smoothbores, abbreviated to 2xAGT-HSB.

Torpedoes

Torpedo size is derived from the weight used. Compare the weight with Table D10.

Table D10. Torpedo Size	
Rating	Charge
Light	Less than 50 lbs
Medium	50 lbs to 99 lbs
Heavy	100 lbs to 500lbs
Super Heavy	500 lbs or over

Example: The CSS David has a Spar torpedo of 70lbs weight. This makes it a Medium Torpedo.

Fort Design

DAMAGE POINTS

Forts have 20 FDP (Fort Damage Points) per gun

Example: A Confederate battery on the Mississippi has 5 8" Smoothbore guns, this gives it 100 FDPs.

GUNS

Guns are defined in the same way as those aboard vessels, except that all count as fixed for arcs of fire.

Example: The 8" Smoothbores count as MSB guns.

Preparing Record Sheets

A ship record sheet must be filled out for each vessel used in a game. This may be done using the information from the ship list, using the ship design rules or by using a pre-printed sheet such as provided in the back of these rules.

Unless using a pre-printed sheet, a blank sheet such as that provided in the rules will be required.

The following procedure should be used when filling out a record sheet.

1. Fill in the details in the boxes marked *Name* etc.
2. Fill in the armour factors for each armour location.
3. On the vessel template, mark off any stack damage point boxes in excess of those of the vessel.
4. Mark off any flotation point boxes in excess of those of the vessel.
5. Divide the Vessel's HDP as equally as possible between the four lines of boxes marked Hull Damage Points. The top line must equal $\frac{1}{4}$ of the total rounded up. The top two lines together must equal $\frac{1}{2}$ the total, rounded up and the top three lines together must equal $\frac{3}{4}$ of the total, rounded up.

Example 1: The Virginia has 70 HDP. $\frac{1}{4}$ of this (rounded up) is 18, so all but 18 of the boxes on the top line are crossed off. $\frac{1}{2}$ of 70 (rounded up) is 35. This, minus the 18 boxes in the top line, gives 17. So all but 17 boxes in the second line are crossed off. $\frac{3}{4}$ of the total (rounded up) is 53. This, minus the 35 boxes in the first two rows, leaves 18, so all but 18 boxes are crossed off in the third row. This leaves 17 boxes for the total of 70. All but these 17 are crossed off the bottom line.

Example 2. The Monitor has 37 HDP. This means that 10 boxes are left unmarked on the top line, 9 on the second line, 9 on the third line and the remaining 9 on the fourth line to make the total 36.

Note: When marking off damage during a game, start by marking off damage in the bottom row and move onto the next line up when all those boxes have been marked off. This makes it easier to tell when a vessel has lost $\frac{1}{4}$, $\frac{1}{2}$ and $\frac{3}{4}$ of its HDP.

6. Mark the vessel's armament on the plan using the symbols shown in figure 7. Guns should be placed in their appropriate locations. Paddle wheels, with the appropriate number of boxes (6 or 10), should be placed across the vessel's stern for sternwheel vessels or on the AP and AS section if sidewheelers with wheels set near the stern, or on the MP and MS sections if sidewheels mounted either side of amidships. Rams and Spar Torpedoes should be placed forward of the vessel. Some examples are given in figure 8.

The ship record sheet is now ready for use.

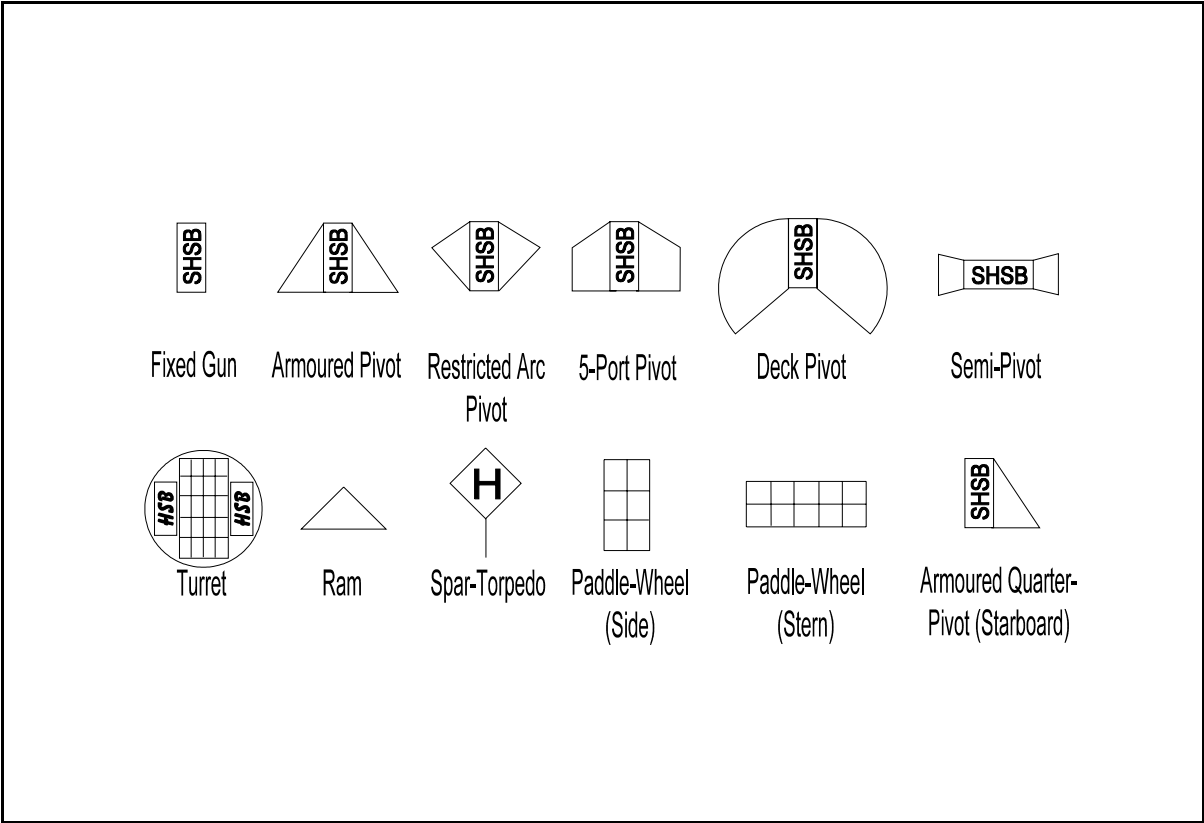


Figure 7

Example sheets for the Monitor and Virginia as well as a blank sheet are provided, which you may photocopy.

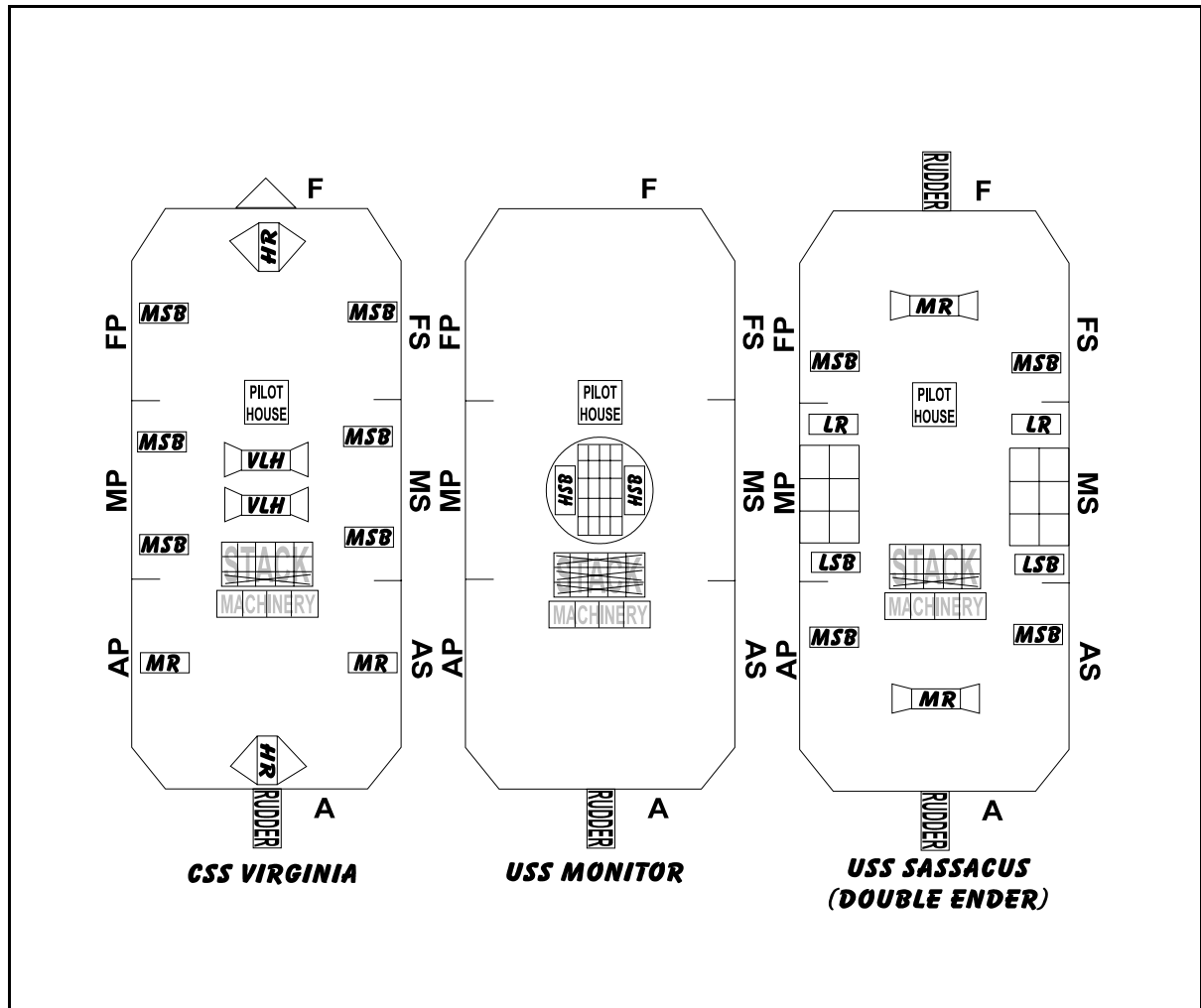


Figure 8

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Model Suppliers

Suitable 1/600th scale models are currently available from two manufacturers:

Thoroughbred Figures

These are very highly detailed models. Cast in high tin content alloy, they look superb. The range currently contains over thirty models, covering many of the more important vessels. They are available from Thoroughbred themselves in the USA, or from Langton Miniatures in the UK. The addresses are given below.

Peter Pig

This range is cast in a combination of metal and resin. The detail is less than that of Thoroughbred, but they are significantly cheaper. There are a similar number of vessels in the range as Thoroughbred, but several different vessels. They are available from Peter Pig in the UK, or via Brookhurst Hobbies in the USA.

ADDRESSES:

Thoroughbred Figures

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4106 Timberland Drive
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Finally we would recommend that anyone interested in Naval Wargaming contact the Naval Wargames Society. They produce a regular newsletter, containing a wide variety of Naval information and also run regular games at several venues around the country. Several traders in the UK also give a discount to members.

Anyone interested should contact the society secretary.

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Ship List - Abbreviations

Configuration

CM	Casemate
Con	Conventional
DTM	Double Turret Monitor
Spec	Special
STM	Single Turret Monitor
STW	Sternwheel
SW	Sidewheel
SWDE	Sidewheel Double Ender
TTM	Triple Turret Monitor

Draught

D	Deep
M	Medium
S	Shallow
VS	Very Shallow

Size

L	Large
M	Medium
S	Small
VL	Very Large
VS	Very Small

Speed

F	Fast
M	Medium
S	Slow
V	Very Fast

Manoeuvrability

A	Average
G	Good
P	Poor
V	Very Good

Armour

C	Cottonclad
H	Heavy
L	Light
M	Medium
pH	Partial Heavy
S	Super Heavy
T	Tinclad
U	Unarmoured

Guns

See Table D8 (Vessel Design)

Model Manufacturer

PP	Peter Pig
TB	Thoroughbred Models

SHIP LIST - UNION

Name	No. in Class	Config	Draft	Size	HDP	Targetting	Speed	Maneuver	Armour														Ram	Guns	Flotation	Date in Service	Model Manufacturer
									Hull			Casemate			Deck	Pilot House	Turret	Stack		Wheels							
									Bow	Broadside	Stern	Bow	Broadside	Stern				Armour	SDP	Rudder	Armour	WDP (each)					
Benton	1	CM	M	V	73	C/E	M	A	U	U	U	M	M	M	U	M	-	U	15	U	-	-	N	2xFGF-MSB,2xFGF-LR,2xFPGF-LR,2xFSGF-LR,2xMPGF-LSB, 2xMSGF-LSB, APGF-LR,ASGF-LSB,2xAGF-LSB	18	24/02/1962	PP
Cairo	7	CM	S	M	45	C/E	M	A	U	U	U	M	pH	U	U	L	-	U	15	U	-	-	N	2xFGF-MSB,2xFPGF-LR,2xFSGF-LR,2xMPGF-LSB, 2xMSGF-LSB,2xAGF-LSB	11	25/01/1962	TB, PP
Canonicus	9	STM	D	M	49	B/B	F	A	M	M	M	-	-	-	L	S	S	S	10	M	-	-	N	2xMGT-SHSB	10	16/04/1964	TB, PP
Choctaw	2	CM	S	L	59	C/F	M	P	L	L	L	L	L	L	L	L	-	U	15	L	U	10	N	FGF-HR,FGF-MSB,FPGF-MSB,FSGF-HSB,MPGF-LH,MSGF-LH,2xAGF-LR	15	23/03/1963	PP
Dictator *	1	STM	D	VL	78	B/B	F	A	H	H	H	-	-	-	L	S	S	S	10	H	-	-	N	2xMGT-SHSB	16	11/11/1964	TB
Essex	1	CM	S	M	38	C/D	F	A	U	U	U	M	M	M	U	L	-	U	15	U	-	-	N	3xFGF-MSB,AGR-HSB,FPGF-LSB, FSGF-VLH	9	?/10/61	PP
Fort Hindman	?	SW	VS	S	28	B/E	M	G	U	U	U	-	-	-	U	T	-	U	15	U	U	6	N	2xFGF-MSB,FPGF-MSB,FSGF-MSB,MPGF-MSB,MSGF-MSB	7	?/5/63	TB
Fuchsia	2	Con	S	S	11	B/D	F	G	U	U	U	-	-	-	U	U	-	U	10	U	-	-	N	FPGF-LR,FSGF-VLR,MPGF-LH,MSGF-LH,APGF-LH,ASGF-LH	3	?/8/63	PP
Hartford	1	Con	D	L	50	C/E	V	A	U	U	U	-	-	-	U	U	-	U	10	U	-	-	N	3xFPGF-MSB,3xFSGF-MSB,4xMPGF-MSB,4xMSGF-MSB,3xAPGF-MSB, 3xASGF-MSB,APGF-MR,ASGF-MR,2xFDP-LR,ADP-VLR	12	27/05/1959	TB
Indianola	1	SW	S	M	46	C/E	M	G	U	U	U	M	M	M	L	M	-	U	15	U	U	6	N	FPGQ-HSB,FSGQ-HSB,A2xGF-MSB	11	14/01/1963	TB
Kearsage	2	Con	D	M	33	B/E	V	A	U	U	U	-	-	-	U	U	-	U	10	U	-	-	N	FDS-HSB,ADS-HSB,2xMPDF-MSB,2xMSDF-MSB,APDF-LR,ASDF-LR	8	24/01/1962	
Miami	1	SWDE	M	M	35	B/E	F	H	U	U	U	-	-	-	U	U	-	U	10	U	U	6	N	FDS-MR,3xFPDF-MSB,3xFSDF-MS,ADP-LR	9	29/01/1962	PP
Miantonomoh	4	DTM	D	L	63	B/C	F	P	S	S	S	-	-	-	L	H	S	S	10	S	-	-	N	2xFGT-SHSB,2xAGT-SHSB	13	18/09/1965	TB
Milwaukee	4	DTM	S	L	64	B/C	F	A	M	M	M	-	-	-	L	H	H	U	10	M	-	-	N	2xFGT-HSB,2xAGT-HSB	13	27/08/1964	TB
Monarch	3	SW	S	M	33	B/E	V	G	U	U	U	C	C	C	U	C	-	U	15	U	U	6	Y	Unarmed	8	23/05/1962	TB
Monitor	1	STM	M	M	37	B/B	M	A	M	M	M	-	-	-	L	S	H	-	-	M	-	-	N	2xMGT-HSB	7	25/02/1962	TB,PP
New Ironsides	1	Con	D	L	67	C/E	M	P	S	S	S	-	-	-	T	S	-	U	10	S	-	-	N	FDP-LR,ADP-LR,FPGF-HR,FSGF-HR,2xFPGF-HSB,2xFSGF-HSB, 3xMPGF-HSB,3xMSGF-HSB,2xAPGF-HSB,2xASGF-HSB	17	21/08/1962	TB,PP
Onondaga	1	DTM	D	L	56	B/C	F	A	M	M	M	-	-	-	T	S	S	S	10	M	-	-	N	FGT-SHSB,FGT-HR,AGT-SHSB,AGT-HR	11	24/03/1964	TB,PP
Osage	2	STM	S	M	41	B/B	F	A	M	M	M	-	-	-	L	L	H	U	15	M	-	-	N	2xFGT-HSB	8	10/07/1963	
Passaic	10	STM	M	M	46	B/B	F	A	M	M	M	-	-	-	L	S	S	S	10	M	-	-	N	MGT-SHSB,MGT-HSB	9	25/11/1962	TB
Paul Jones	1	SWDE	S	M	38	B/E	V	H	U	U	U	-	-	-	U	U	-	U	10	U	U	6	N	FDS-MR, ADS-HSB,FPDF-LR,FSDF-LR,APDF-LSB,ASDF-LSB,MPDF-MSB,MSDF-MSB	10	26/05/1962	TB
Roanoke	1	TTM	D	V	74	C/F	F	P	M	M	M	-	-	-	L	S	S	S	10	M	-	-	N	FGT-SHSB,FGT-HR,MGT-SHSB,MGT-HSB,AGT-HSB,AGT-HR	15	26/06/1963	TB
Sassacus	28	SWDE	M	M	42	B/E	V	G	U	U	U	-	-	-	U	U	-	U	10	U	U	6	N	FDS-MR,ADS-MR,MPDF-LR,MSDF-LR,MPDF-LSB,MSDF-LSB, FPDF-MSB,FSDF-MSB,APDF-MSB,ASDF-MSB	11	05/10/1963	TB,PP
Signal	1	STW	VS	S	24	B/D	F	G	U	U	U	T	T	T	U	T	-	U	15	U	U	10	N	2xFGF-LR,FGF-LR,2xMPGF-LH,2xMSGF-LH	6	?/10/62	PP
Spuyten Duyvil	1	CON	S	VS	8	B/C	M	G	M	M	M	-	-	-	L	M	-	U	10	M	-	-	N	1 Medium Spar Torpedo	2	?/10/64	-

* Dictator's Turret has 30 TDP not 20.

SHIP LIST - CONFEDERATE

Name	No. in Class	Configuration	Draft	Size	HDP	Targetting	Speed	Manoeuvrability	Armour														Guns	Flotation Points	Date in Service	Model Manufacturer	
									Hull			Casemate			Deck	Pilot House	Turret	Stack		Wheels							
									Bow	Broadside	Stern	Bow	Broadside	Stern				Armour	SDP	Rudder	Armour	WDP (each)					
A.D.Vance	1	SW	S	M	31	B/E	V	G	U	U	U	-	-	-	U	U	-	U	15	U	U	6	N	Unarmed (Blockade Runner)	8	?/7/62	PP
Alabama	1	Con	D	M	35	B/E	V	P	U	U	U	-	-	-	U	U	-	U	10	U	-	-	N	FDS-HR,ADS-MSB,FPDF-LSB,FSDf-LSB,MPDF-LSB, MSDF-LSB,APDF-LSB,ASDF-LSB	9	24/09/1962	
Albermarle	1	CM	M	S	26	B/D	M	A	L	H	L	H	H	H	U	H	-	U	10	L	-	-	Y	FGP-MR,AGP-MR	6	17/05/1964	TB,PP
Arkansas	1	CM	M	S	29	B/E	M	A	U	U	U	H	H	L	U	H	-	U	10	U	-	-	Y	2xFGF-MSB,FPGF-HC,FSGF-HC,MSGF-HC,APGF-MSB, ASGF-MSB,2xAGF-MR	7	26/06/1962	TB
Atlanta	1	CM	D	M	42	C/E	F	A	L	S	L	H	S	H	T	S	-	U	10	L	-	-	Y	FGP-HR,AGP-HR,MSGF-MR,MPSF-MR,H-Spar Torpedo	10	?/10/62	TB
Col. Lovell	3+	SW	M	S	24	B/E	V	G	U	U	U	C	C	C	U	C	-	U	10	U	U	6	Y	2xFDP-MSB,2xADP-MSB	6	?/7/61	TB
Columbia	2	CM	D	L	56	C/E	M	A	L	L	L	S	S	S	L	S	-	U	10	L	-	-	Y	FPGQ-HR,FSGQ-HR,MPGF-MR,MSGF-MR,APGQ-HR, ASGQ-HR	14	?/03/62	TB
David	?	Con	S	VS	2	A/A	V	V	U	U	U	-	-	-	U	M	-	U	10	U	-	-	N	M-Spar Torpedo	1	?/7/63	PP
General Bragg	1	CM	M	M	34	B/E	V	H	U	U	U	Cp	Cp	Cp	U	C	-	U	10	U	U	6	Y	FDP-LR,ADP-LSB,FDP-VLR	9	25/03/1962	PP
Govenor Moore	3	SW	D	M	42	B/E	V	H	U	U	U	Cp	Cp	Cp	U	C	-	U	10	U	U	6	Y	FDP-LR,ADP-LR	10	?/1/62	TB,PP
Louisiana	1	CM	D	VL	82	C/F	S	P	U	U	U	H	H	H	U	U	-	U	10	U	-	-	N	2xFGF-MSB,FGF-HR,3xFSGF-LR,2xASGF-MSB, 3xFPGF-LR,MPGF-LR,MPGF-MSB,2xAGF-MSB,AGF-HR	20	06/02/1962	TB
Manassus	1	Con	D	S	24	A/B	M	A	L	L	L	-	-	-	L	L	-	U	10	L	-	-	Y	FGF-LSB	6	?/7/61	TB,PP
Nashville	1	SW	M	VL	85	C/F	M	A	U	U	U	S	U	S	U	S	-	U	10	U	U	10	N	FPGQ-HR,FSGQ-HR,APGQ-LH,ASGQ-HR	21	?/7/63	PP
Neuse	1	CM	M	S	26	B/D	M	A	L	H	L	H	H	H	L	H	-	U	10	L	-	-	Y	FG5-MR,AG5-MR	6	25/05/1964	TB
Planter	1	SW	S	S	22	B/D	V	VH	U	U	U	-	-	-	U	U	-	U	15	U	U	6	N	FDP-LSB,ADP-LH	6	?/7/60	PP
Richmond	6	CM	D	S	29	C/E	M	A	L	L	L	H	H	H	L	H	-	U	10	L	-	-	Y	FGP-HR,AGP-HSB,MSGF-MR,MPGF-MR,Med Spar Torp	7	?/7/62	TB
Selma	1	SW	S	M	38	B/F	F	H	U	U	U	-	-	-	U	U	-	U	10	U	U	6	N	FDP-MR,ADP-MSB,2xADS-MSB	9	22/04/1961	PP
Stonewall	1	Spc	D	S	28	B/E	V	P	M	M	M	M	M	M	U	H	M	U	10	M	-	-	Y	FGP-SHR,2xAGT-MR	7	?/1/65	TB
Teaser	?	Con	S	VS	7	B/C	F	G	U	U	U	-	-	-	U	U	-	U	10	U	-	-	N	FDP-LR	2	?/7/60	TB
Tennessee II	1	CM	D	L	50	C/E	M	A	L	S	L	S	H	H	?	H	-	U	10	U	-	-	Y	FGP-HR,AGP-HR,2xMSGF-MR,2xMPSF-MR	13	16/02/1964	TB,PP
Tuscaloosa	2	CM	S	S	26	B/D	S	A	U	U	U	H	H	H	U	H	-	U	10	U	-	-	N	FPGQ-MR,FSGQ-LSB,APGQ-LSB,ASGQ-LSB	6	07/02/1963	PP
Virginia	1	CM	D	VL	70	C/F	M	P	L	L	L	H	H	H	U	S	-	U	10	L	-	-	Y	FGR-HR,AGR-HR,FPGF-MSB,FSGF-MSB,2xMPGF-MSB ,2xMSGF-MSB,APGF-MR,ASGF-MR,2xMDS-VLH	18	?/3/62	TB,PP

SPEED COUNTERS

I	I	I	I	I	I	I	I
I	I	I	I	I	I	I	I
S	S	S	S	S	S	S	S
S	S	S	S	S	S	S	S
<u>S</u>	<u>S</u>	<u>S</u>	<u>S</u>	<u>S</u>	<u>S</u>	<u>S</u>	<u>S</u>
M	M	M	M	M	M	M	M
M	M	M	M	M	M	M	M
<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>
F	F	F	F	F	F	F	F
F	F	F	F	F	F	F	F
<u>F</u>	<u>F</u>	<u>F</u>	<u>F</u>	<u>F</u>	<u>F</u>	<u>F</u>	<u>F</u>
V	V	V	V	V	V	V	V
V	V	V	V	<u>V</u>	<u>V</u>	<u>V</u>	<u>V</u>

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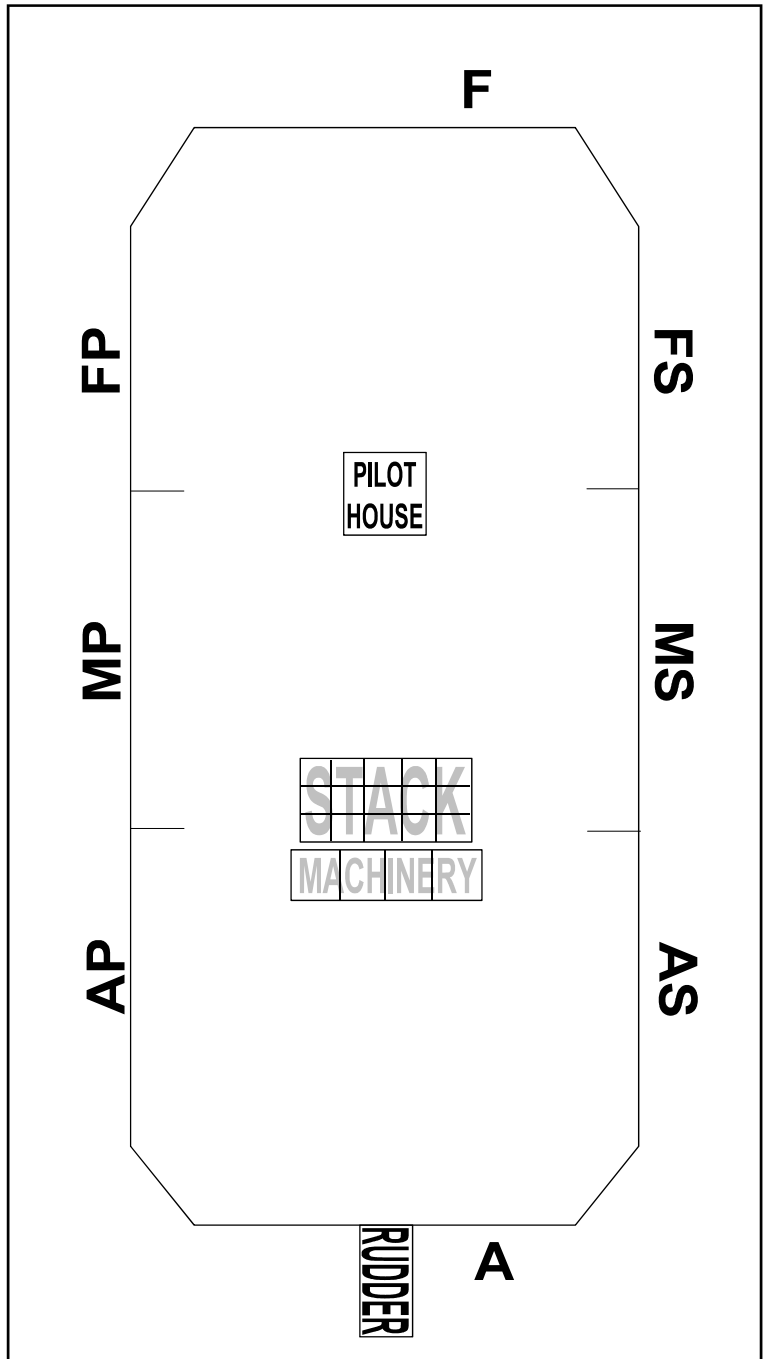
Name				Nationality	
Class		Configuration		Draught	
HDP		Vessel Size		Targetting Size	
Max Speed		Date in Service		Manoeuvrability	

Armour

Hull	Bow
	Broadside
	Stern
Casemate	Bow
	Broadside
	Stern
Deck	
Pilot House	
Turret/s	
Stack	
Rudder	
Wheel/s	

ORDERS

Turn	Speed	Movement	Tactical
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			
23			
24			
25			
26			
27			
28			



Flotation Points									
1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20

Flooding Points

1 2 3 4 5 6 7 8 9 10

Hull Damage Points

Non-Damage Points																				Max Speed -2
																				Max Speed -1

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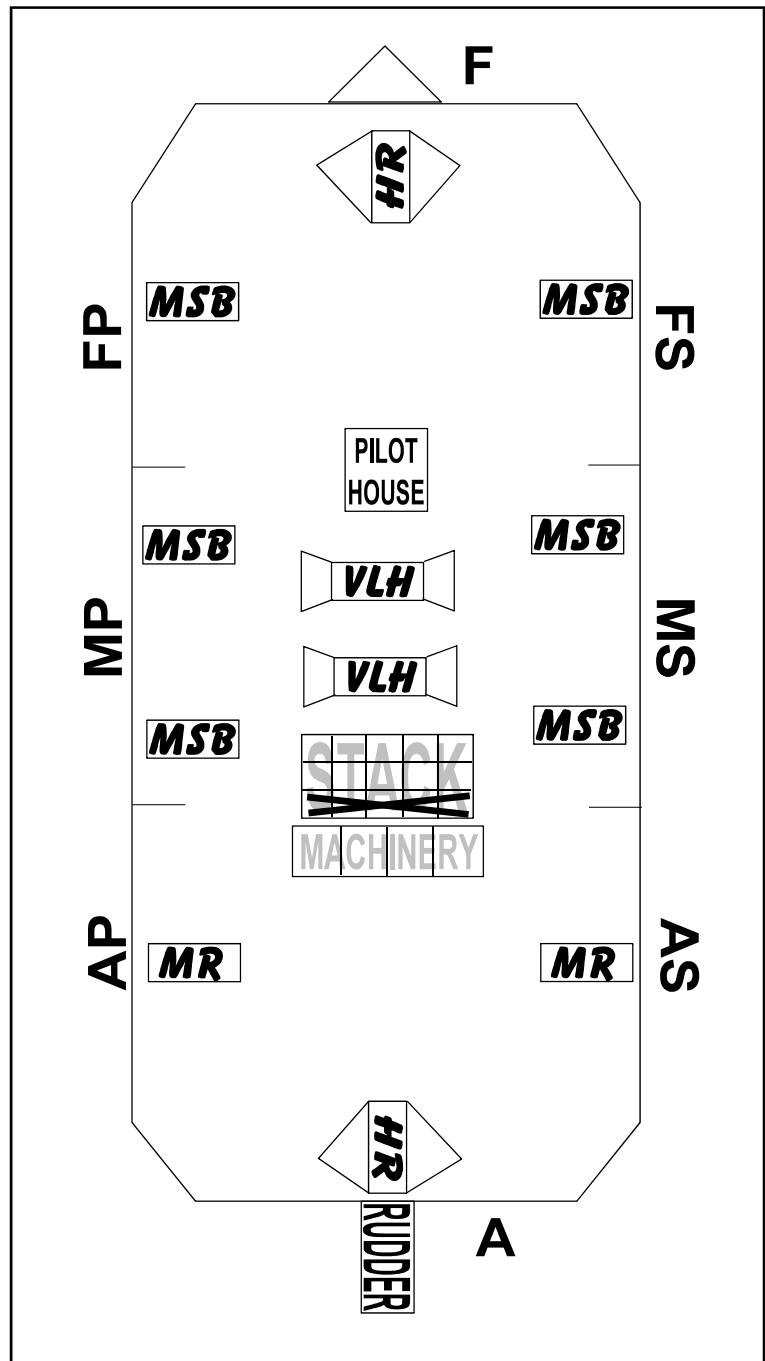
Name	VIRGINIA			Nationality	CONFED.
Class	-	Configuration	CASEMATE	Draught	DEEP
HDP	70	Vessel Size	V.LARGE	Targetting Size	C/F
Max Speed	MEDIUM	Date in Service	MARCH '62	Manoeuvrability	POOR

Armour

Hull	Bow	LIGHT
	Broadside	LIGHT
	Stern	LIGHT
Casemate	Bow	HEAVY
	Broadside	HEAVY
	Stern	HEAVY
Deck	UNARMoured	
Pilot House	SUPER HEAVY	
Turret/s	-	
Stack	UNARMoured	
Rudder	LIGHT	
Wheel/s	-	

ORDERS

Turn	Speed	Movement	Tactical
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			
23			
24			
25			
26			
27			
28			



Flotation Points									
1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18		

Flooding Points

1 2 3 4 5 6 7 8 9 10

Hull Damage Points

[illegible]

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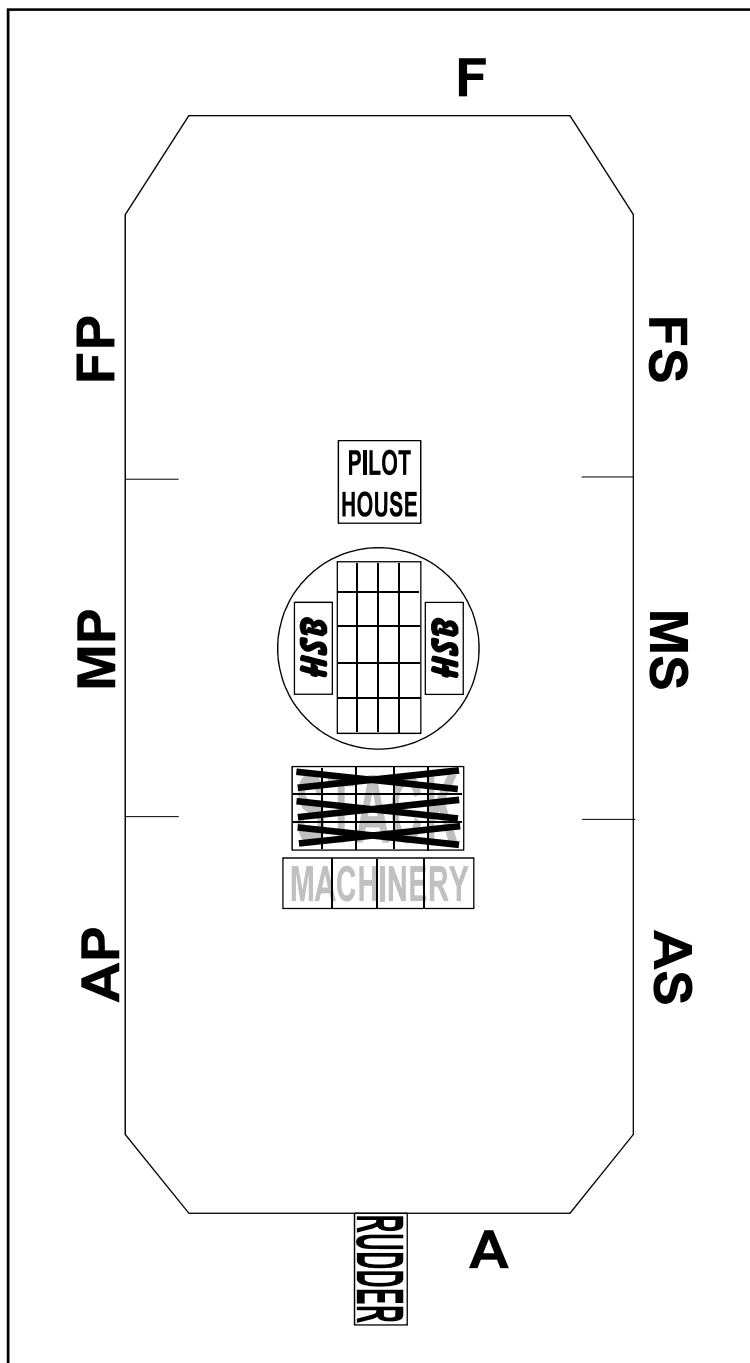
Name	MONITOR			Nationality	UNION
Class	-	Configuration	S.T.MONITOR	Draught	MEDIUM
HDP	37	Vessel Size	MEDIUM	Targetting Size	B/B
Max Speed	MEDIUM	Date in Service	25/2/62	Manoeuvrability	AVERAGE

Armour

Hull	Bow	MEDIUM
	Broadside	MEDIUM
	Stern	MEDIUM
Casemate	Bow	-
	Broadside	-
	Stern	-
Deck	LIGHT	
Pilot House	SUPER HEAVY	
Turret/s	HEAVY	
Stack	-	
Rudder	MEDIUM	
Wheel/s	-	

ORDERS

Turn	Speed	Movement	Tactical
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			
23			
24			
25			
26			
27			
28			



Flotation Points

1	2	3	4	5	6	7
---	---	---	---	---	---	---

Flooding Points

1	2	3	4	5	6	7	8	9	10
---	---	---	---	---	---	---	---	---	----

Hull Damage Points

Max Speed -2
Max Speed -1

SMOKE ON THE WATER© FORT RECORD SHEET

GUN LAYOUT



FORT DAMAGE POINTS

1 Gun	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
2 Gun	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
3 Gun	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
4 Gun	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
5 Gun	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
6 Gun	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120
7 Gun	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140
8 Gun	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160
9 Gun	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180
10 Gun	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200
11 Gun	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220
12 Gun	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240
13 Gun	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260
14 Gun	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280
15 Gun	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300
16 Gun	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320
17 Gun	321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340
18 Gun	341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358	359	360
19 Gun	361	362	363	364	365	366	367	368	369	370	371	372	373	374	375	376	377	378	379	380
20 Gun	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400



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MOVEMENT

Table 1. Order of Play

1	Orders Phase
2	Movement Phase
3	Gunnery Phase
4	Boarding Phase
5	Morale Phase
6	Fire Test Phase
7	Repair Phase

Order Codes			
Code	Order	Code	Order
Speed		Manoeuvre	
I	Immobile	Fx	Fwd x cm
S	Slow Fwd	Ax	Aft x cm
S	Slow Aft	Px	Port x cm
M	Medium Fwd	Sx	Stbd. x cm
M	Medium Aft	Tactical	
F	Fast Fwd	BD	Board
F	Fast Aft	SS	Scuttle
V	V.Fast Fwd	AN	Anchour
V	V.Fast Aft	GR	Run Aground

Table 2. Move Distances	Move Distance	
	10 cm	25 cm
	40 cm	60 cm
	Vessel's Current Speed	
	Slow	Medium
	Fast	Very Fast



Table 3. Running Aground

Base Chance (given by depth) or Less on 1d10			
Depth of Water			
Draught	Mud Banks, Sand Bars, Wrecks in Shallow Water	Shallow Water or Wrecks in Rivers or Estuaries	Deep Water
V. Shallow	1	-	-
Shallow	3	-	-
Medium	6	1	-
Deep	8	5	-
"-" indicates that a vessel does not have to test			
Modifiers			
Moving Slow			-2
Moving Fast			+1
Moving Very Fast			+2
Local Pilot			-1
Vessel has lost at least 1/2 Flotation Points			+2
Vessel attempting to run aground			+2

Table 4. Grounding Damage

Roll 1d3 and add Modifiers	
Moved Fast	+1
Moved Very Fast	+2
Moved Slow	-2
Very Small Vessel	-4
Small Vessel	-1
Large Vessel	+1
Very Large Vessel	+2
Aground on Mud Bank/ Sand Bar	-1



Table 5. Breaking Free from Gounding

Base Chance 5 or less on 1d10	
Very Shallow Draught	+4
Shallow Draught	+2
Deep Draught	-2
Vessel's Current Max Speed	
Slow	-1
Fast	+1
Very Fast	+2
Flooding	-2
Each subsequent attempt after the first(cumulative)	-1

Table 7. Locking

Base chance 5 or less on 1d10	
Vessel which collided bows on is equipped with ram	-2
Both are Fully Rigged Vessels	+2
Either vessel took flooding hits	+1 per point

Table 6. Collision Damage

Roll 1d6 and add modifiers	
Contacted to Bow and Ram equipped	-6
Hull armour (if collision not to bow, or not ram equipped)	0 -1 -2 -4 -6 -8
Unarmoured	
Tinclad	
Light	
Medium	
Heavy	
Super Heavy	
Collision Speed	
Slow	-1
Fast	+1
Very Fast	+2
Struck by Bow of Ram equipped vessel	+2
Struck by Bow of Very Small vessel	-4
Struck by Bow of Small vessel	-2
Struck by Bow of Large vessel	+1
Struck by Bow of Very Large vessel	+2
Collision Arc of Testing Vessel	
Bow	0
Port or Starboard Bow	+1
Port or Starboard Broadside	+2
Port or Starboard Quarter	0
Stern	-1

Table 8. Breaking free when locked

Base chance 5 or less on 1d10	
Either Vessel Suffered Flooding due to Collision	-1 per point
Vessel which collided bows on is attempting to break free	+1/+3 if Ram
Both vessels attempting to break free	+2

SMOKE ON THE WATER© QUICK REFERENCE SHEET GUNNERY 1

Table 9. Gunnery Ranges

Range (in cm)	0	5	20	50	75	125	150	250	300	400	500
SHSB	PB	S	M	L	E						
HSB	PB	S	M	L	E						
MSB	PB	S	M	L	E						
LSB	PB	S	M	L	E						
VLSB	PB	S	M	L	E						
SHR	PB	S	M	L	E						
HR	PB	S	M	L	E						
MR	PB	S	M	L	E						
LR	PB	S	M	L	E						
VLR	PB	S	M	L	E						
SHC	PB	S	M	L	E						
HC	PB	S	M	L	E						

Table 12. Gunnery Ranges (Indirect)

Range (in cm)	0	10	25	50	100	200
SHH	Direct	S	M			
HH	Direct	S	M			
MH	Direct	S	M			
LH	Direct	S	M			
VLH	Direct	S				
SHM	-	S	M	L	E	
HM	-	S	M	L	E	
MM	-	S	M	L		
LM	-	S	M	L		
VLM	-	S	M	L		

- INDICATES THAT THE WEAPON MAY NOT FIRE WITHIN THIS RANGE AS IT IS TOO CLOSE

Table 13. Deviation

Short	Medium	Long	Extreme
1d5	1d10	2d10	1d10+10

Table 11. Misfires

Confederate		Union	
Roll	Effect	Roll	Effect
1-7	None	1-8	None
8-9	Jams	9	Jams
10	Bursts	10	Bursts

Roll 1d10

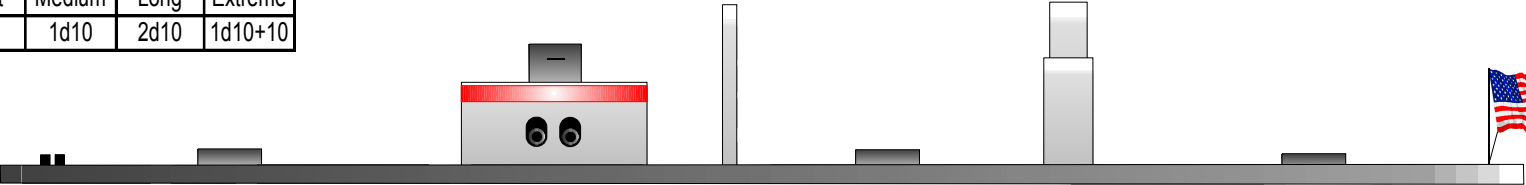
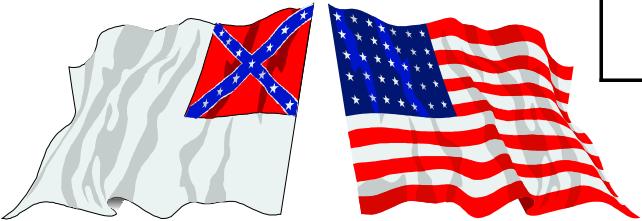
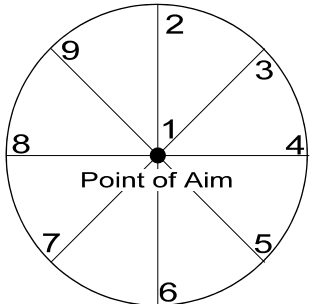


Table 10. Direct Fire

Base chance 5 or less on 1d10

Range		
Point Blank		+4
Short		+2
Medium		0
Long		-2
Extreme		-4
Firing Vessel	Moving at Fast	-1
	Moving at Very Fast	-2
Target Vessel	Moving at Fast	-1
	Moving at Very Fast	-2
	Immobile	+1
Target Size	A	-4
(If Greater than	B	-2
Point-Blank Range)	C	-1
	D	0
	E	+1
	F	+2
Target Obscured	1/4 to 1/2	-1
	1/2 to 3/4	-2
	over 3/4	-4



10 indicates a Misfire

SMOKE ON THE WATER© QUICK REFERENCE SHEET **GUNNERY 2**

Table 14. Hit Locations					Roll 1d10 Note: A 10 indicates a Critical				
Conventional/Casemate					Single Turret Monitor				
Roll	Bow	Broadside	Stern	Plunging	Roll	Bow	Broadside	Stern	Plunging
1	Hull	Hull	Hull	Hull	1	Hull	Hull	Hull	Hull
2	Gun	Gun	Gun	Casemate	2	Hull	Hull	Hull	Deck
3	Casemate	Casemate	Casemate	Casemate	3	Gun	Gun	Gun	Deck
4	Casemate	Casemate	Casemate	<u>Casemate</u>	4	Turret	Turret	Turret	Deck
5	Casemate	Casemate	Casemate	Deck	5	Turret	Turret	Turret	Deck
6	<u>Casemate</u>	<u>Casemate</u>	<u>Casemate</u>	Deck	6	Turret	Turret	Turret	Deck
7	<u>Casemate</u>	<u>Casemate</u>	<u>Casemate</u>	Deck	7	Turret	Turret	Stack	Turret
8	Stack	Stack	Stack	Deck	8	Turret	Stack	Stack	Turret
9	Stack	Stack	Stack	Deck	9	Turret	Stack	Stack	Turret
Sidewheel Vessel					Double Turret Monitor				
Roll	Bow	Broadside	Stern	Plunging	Roll	Bow	Broadside	Stern	Plunging
1	Hull	Hull	Hull	Hull	1	Hull	Hull	Hull	Hull
2	Gun	Gun	Gun	P.Wheel	2	Hull	Hull	Hull	F.Turret
3	Casemate	Casemate	Casemate	S.Wheel	3	Gun	Gun	Gun	F. Turret
4	<u>Casemate</u>	<u>Casemate</u>	<u>Casemate</u>	Casemate	4	F. Turret	F. Turret	A. Turret	A. Turret
5	<u>Casemate</u>	<u>Casemate</u>	<u>Casemate</u>	<u>Casemate</u>	5	F. Turret	F. Turret	A. Turret	A. Turret
6	P.Wheel	Wheel	P.Wheel	Deck	6	F. Turret	A. Turret	A. Turret	Deck
7	S.Wheel	Wheel	S.Wheel	Deck	7	F. Turret	A. Turret	A. Turret	Deck
8	Stack	Stack	Stack	Deck	8	F. Turret	Stack	A. Turret	Deck
9	Stack	Stack	Stack	Deck	9	F. Turret	Stack	A. Turret	Deck
Sternwheel Vessel					Triple Turret Monitor				
Roll	Bow	Broadside	Stern	Plunging	Roll	Bow	Broadside	Stern	Plunging
1	Hull	Hull	Hull	Hull	1	Hull	Hull	Hull	Hull
2	Gun	Gun	Gun	Casemate	2	Gun	Gun	Gun	F.Turret
3	Casemate	Casemate	Casemate	Casemate	3	F. Turret	F. Turret	A. Turret	M. Turret
4	Casemate	<u>Casemate</u>	<u>Casemate</u>	<u>Casemate</u>	4	F. Turret	F.Turret	A. Turret	A. Turret
5	Casemate	<u>Casemate</u>	Wheel	Deck	5	F. Turret	M. Turret	A. Turret	Deck
6	<u>Casemate</u>	Wheel	Wheel	Deck	6	F. Turret	M.Tuuret	A. Turret	Deck
7	<u>Casemate</u>	Wheel	Wheel	Deck	7	F. Turret	A. Turret	A. Turret	Deck
8	Stack	Stack	Stack	Deck	8	F. Turret	A.Turret	A. Turret	Deck
9	Stack	Stack	Stack	Deck	9	F. Turret	Stack	A. Turret	Deck
On non-casemate vessels count Casemate as Hull									

Table 15. Critical Hits					Roll 1d10		
Roll	Hit	Armour	Specials (roll 1d6)				
			Roll	Effect	Armour		
1	Pilot House	Pilot House					
2	Port Jammed	C/M, Hull or Turret	1	Gun Port	None		
3	Fire	Hull	2	Gun Port	None		
4	Flooding	Hull	3	Machinery	Hull		
5	Rudder	Rudder	4	Turret Jams	None		
6	Special	See Table	5	Boiler Bursts	Hull		
For SPECIAL roll on specials column			6	Magazine Explodes	Hull		

Table 16. Armour Deflection										Roll under target number plus modifiers on 1d10									
Gun Type (Solid Shot)								Gun Size (Shell)											
SHSB, SHC	U	C	T	L	M	H	S	Super Heavy	U	C	T	L	M	H	S				
HSB,HC	*	*	*	5	7	9	10	Heavy	*	5	*	9	10	-	-				
MSB	*	3	*	7	9	10	12	Medium	*	7	*	10	-	-	-				
LSB	*	5	*	9	10	-	-	Light	*	9	3	-	-	-	-				
VLSB	*	7	*	-	-	-	-	Very Light	*	10	3	-	-	-	-				
	*	9	5	-	-	-	-		*	-	5	-	-	-	-				
SHR	*	*	*	*	3	5	7												
HR	*	1	*	3	5	7	9												
MR	*	3	*	5	7	9	10												
LR	*	5	*	9	10	-	-												
VLR	*	7	3	10	-	-	-												
								Range				Modifier							
								Extreme				+3							
								Long				+1							
								Short				-1							
								Point Blank				-2							
*A - Hit Automatically penetrates. No test required -' Shot cannot penetrate armour at any range. No test required																			



Table 17. Gun Damage											
Firing Shot (Solid or Red Hot)						Firing Shell					
Size of Gun	PB	S	M	L	E	Size of Gun	DP Inflicted				
Very Light	2/0	1/0	1/0	1/0	1/0	Very Light	2/0				
Light	4/0	2/0	2/0	2/0	1/0	Light	4/0				
Medium	6/0	4/0	4/0	3/0	2/0	Medium	6/1				
Heavy	8/1	6/1	6/0	5/0	4/0	Heavy	10/2				
Superheavy	10/2	8/1	8/0	7/0	6/0	Superheavy	16/2				
Shot damage is given for						Shell Damage is unmodified					
Penetrating/Non-penetrating Hits						by Range					
Shell Detonation (Roll 1d10)						Damage for shells is given as x/y					
Union			1-8			where x is for detonated shells					
Confederate			1-7			and y is for undetonated shells					

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MORALE

Table 18. Boarding Actions Roll 2d6 and add Modifiers	
Attacker's HDP > 3 x Defender's HDP (not cumulative)	+3
Attacker's HDP > 2 x Defender's HDP (not cumulative)	+2
Defender's HDP > 2 x Attacker's HDP (not cumulative)	-2
Defender's HDP > 3 x Attacker's HDP (not cumulative)	-3
Attacker is Special Boarding Party	+1
Per VL deck gun on defending vessel	-1
Defender is Ironclad	-3
Result	Total
Attacker is repulsed, losing 1d6 HDP	4 or less
Attacker is repulsed. Both sides lose 1d6 HDP	5-7
Stalemate. Both sides lose 1d6 HDP and continue next turn unless attacker withdraws.	8-10
Defender defeated, but attempts to scuttle ship (see Morale rules). Attacker captures ship	11-12
Defender defeated. Attacker captures ship.	13+

Causes of Morale Test

- Vessel is Flooding
- Vessel or Fort has lost at least 1/2 HDP or FDP and suffered damage this turn
- Captain killed this turn
- Under fire and unable to return fire (unless vessel is unarmed)
- Vessel on Fire
- Friendly vessel seen sunk or surrendered this turn (before morale phase)



Table 19. Morale Test	
Cause (Roll 2d6. Fails on 2 or Less)	Modifier
Vessel on fire	-2
Vessel flooding	-2
Captain killed this turn	-2
Captain killed in a previous turn	-1
Per enemy vessel seen sunk or surrendered	+1
Per friendly vessel seen sunk or surrendered	-1
Flagship seen surrendered or sunk	-1
1/2 to 3/4 HDP/FDP taken	-1
Over 3/4 HDP/FDP taken	-2
Torpedo detonated in contact with vessel this turn	-2

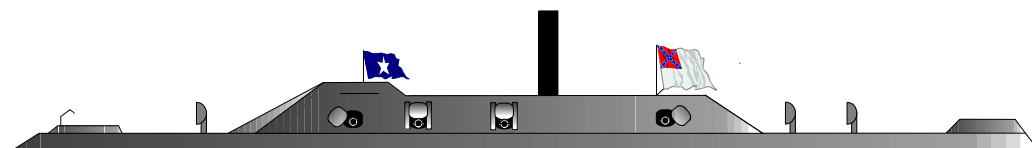
Table 21. Fire Test Roll 2d6 plus modifiers	
Modifiers	
Has lost 1/2 to 3/4 HDP/FDP (ignore if abandoned)	+1
Has lost over 3/4 HDP/FDP (ignore if abandoned)	+2
Vessel exploded in contact this turn	+3
Came into contact with Fireship or Fire Raft this turn	+3
Vessel or Fort abandoned and has not been boarded	+4
Per Fire Test Marker on vessel or fort	+1
Per previous consecutive turn on fire	+1
Tester is Fort	-2
Result	Effect
2-9	Fire Extinguished
10-14	Fire starts or continues to burn. If not on fire last turn place an On Fire marker on the vessel. Vessel/Fort takes 1d3 HDP/FDP. Test again next turn.
15+	Fire burns out of control. Crew abandon ship or fort. Vessel drifts, taking 1d6 HDP per turn. Fort takes 1d6 FDP per turn. Each turn roll 1d10 with a +1 cumulative modifier for every full turn burning out of control. On a result of 10 or more the magazine explodes (see Hit Descriptions)

Table 20. Effects of a Failed Morale Test		
Fort or gun battery	At least 1/2 FDP remaining Less than 1/2 FDP remaining	Abandon Fort Surrender
Flooding	Roll 1d10. If roll is greater than current flotation points, then Abandon Ship, else react as indicated by conditions below	
Vessel on Fire		Abandon Ship
15cm or less from enemy	Under fire or Unable to Move Not under fire	Surrender Retreat
More than 15cm from enemy	Able to Move Unable to Move	Retreat Abandon Ship and Scuttle

Causes of Fire Test

- Vessel or Fort suffered a Fire Critical
- Vessel or Fort hit by red hot shot or detonating shell
- Vessel within 10cm explodes
- Gun explodes on vessel or fort
- In contact this turn with
- Vessel came into contact this turn with fire ship, fire raft or ship that is burning out of control
- A vessel's orders included 'scuttle ship'

Repairs Roll 1d6		
Repair	Success	Permanent
Unjam Gun port	5 or 6	1
Repair Rudder	5 or 6	1
Unjam Gun	5 or 6	1
Repair Machinery	5 or 6	1
Reduce Flooding	5 or 6	-
If successful reduce flooding by 1d3		



SMOKE ON THE WATER© QUICK REFERENCE SHEET TORPEDOES AND FORTS

Table 22. Spar Torpedo Attacks Base Chance 5 or less on 1d10

Collision Speed	
Medium	-1
Fast	-2
Very Fast	-4
Collision Arc of Target Vessel	
Broadside	+1
Bow	-2
Stern	-1
Target Immobile	+2

Table 23. Remote Torpedo Detonation Base Chance 5 or less on 1d10

Year	Modifier
1861-1862	-1
1863-1864	0
1865	+1

Table 24. Fixed Torpedo Detonation Base Chance 5 or less on 1d10

Year	Modifier
1861-1862	-1
1863-1864	0
1865	+1
Testing Vessel's Draught	
Very Shallow	-2
Shallow	-1
Deep	+1
Per previous test for this area (cumulative)	-1

Table 25. Floating Torpedo Detonation Base Chance 5 or less on 1d10

Year	Modifier
1861-1862	-3
1863-1864	-1
1865	0

Table 26. Torpedo Damage 2d6 plus modifiers

Light Torpedo	-2
Heavy Torpedo	+2
Super Heavy Torpedo	+4
Contact Torpedo against vessel with mine catcher	-4
Results	
Effect	Total
No Effect	2 or less
1d6 HDP, No Flooding	3 - 5
2d6 HDP, 1d3 Flooding	6 - 8
3d6 HDP, 1d6 Flooding	9 - 13
Vessel's Back Broken, Sinks Instantly	14+



Table 28. Fort Criticals Roll 1d6

Roll	Critical	Special (1d6)	Special Critical
1	Flagstaff	1	Gun Explodes
2	Fire	2	Gun Explodes
3	Fire	3	Commander Killed
4	Embrasure	4	Commander Killed
5	Embrasure	5	Magazine Collapses
6	Special	6	Magazine Explodes

Table 29. Fort Armour Deflection

Gun Size	Masonry or Brick Forts		Sand or Earth Forts	
	Solid Shot	Shell	Solid Shot	Shell
Very Light	10	8	8	10
Light	9	7	7	9
Medium	8	6	6	8
Heavy	7	5	5	7
Very Heavy	6	4	4	6
Modifiers for Range (Solid Shot Only)				
Range	Modifier			
Extreme	+3			
Long	+1			
Short	-1			
Point Blank	-2			

Table 27. Fort Hit Locations

Roll (1d10)	Location
1	Gun
2	Gun
3	Structure
4	Structure
5	Structure
6	Structure
7	Structure
8	Structure
9	Structure
10	Critical



SMOKE ON THE WATER© QUICK REFERENCE SHEET SUPPRESSION

Table30. Suppression Points

Gun Size	Solid Shot or Undetonated Shell	Detonated Shell
Very Light	1/2	1
Light	1	2
Medium	1	2
Heavy	2	3
Very Heavy	2	4

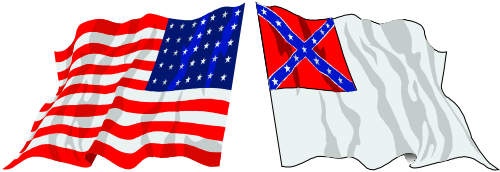
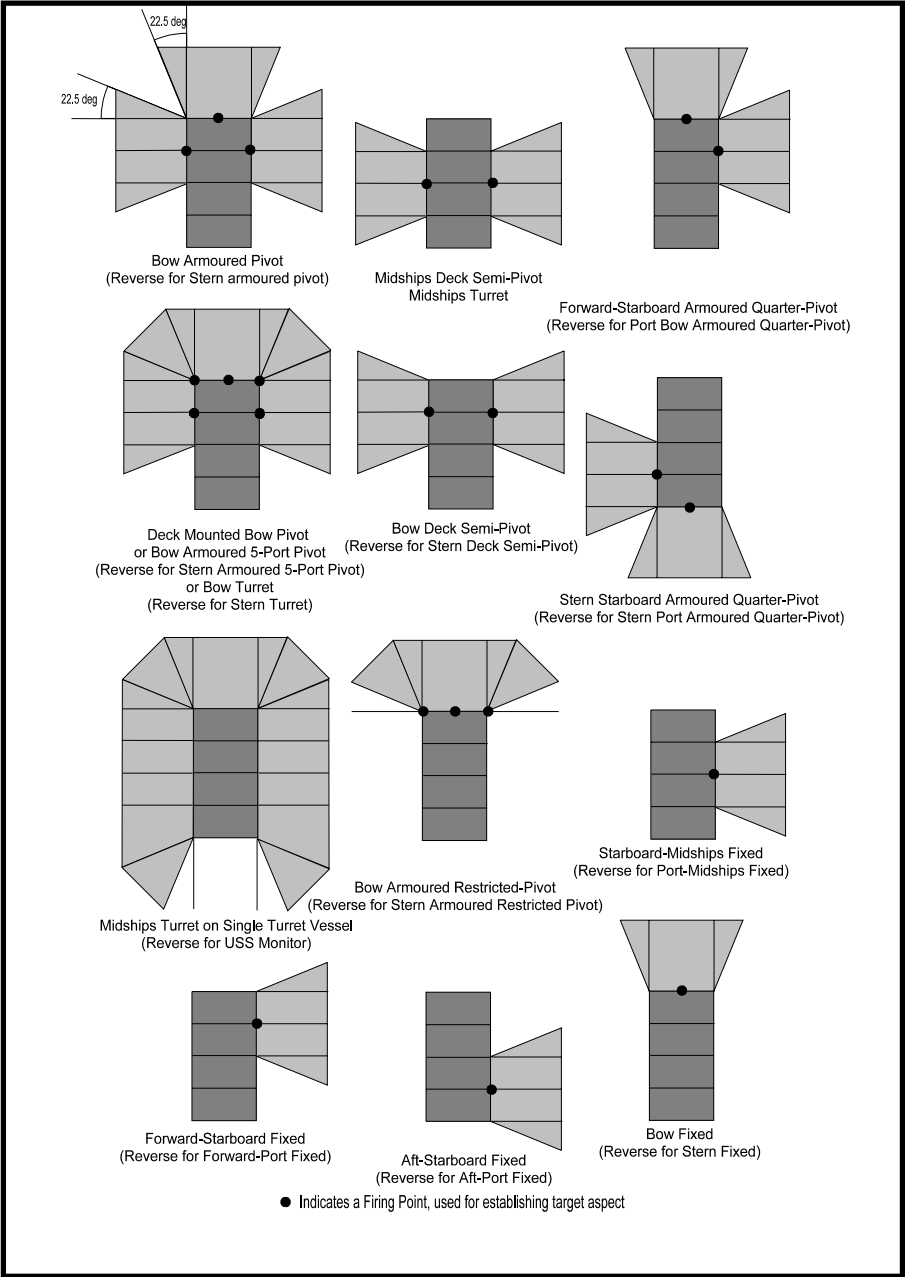
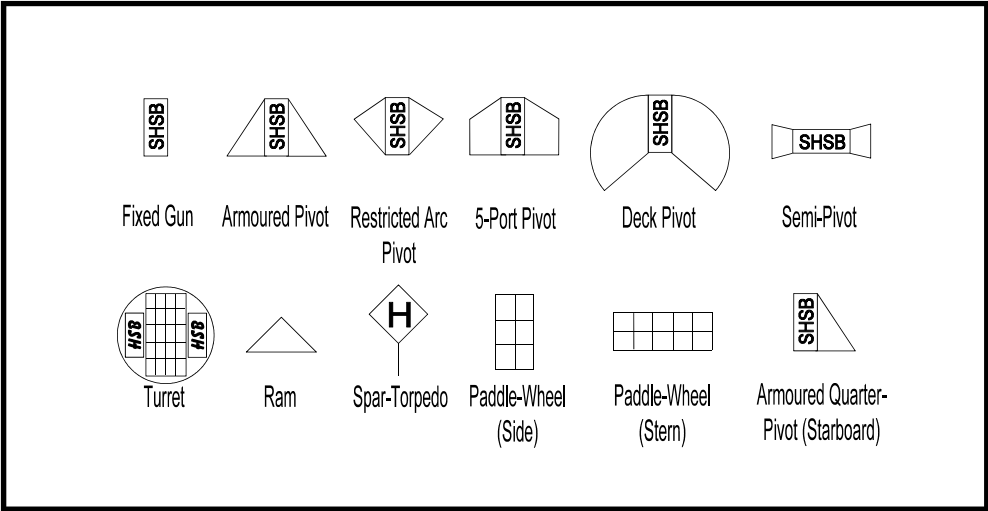
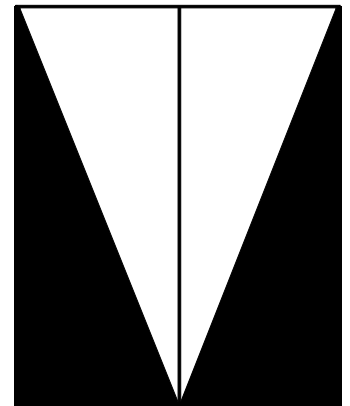
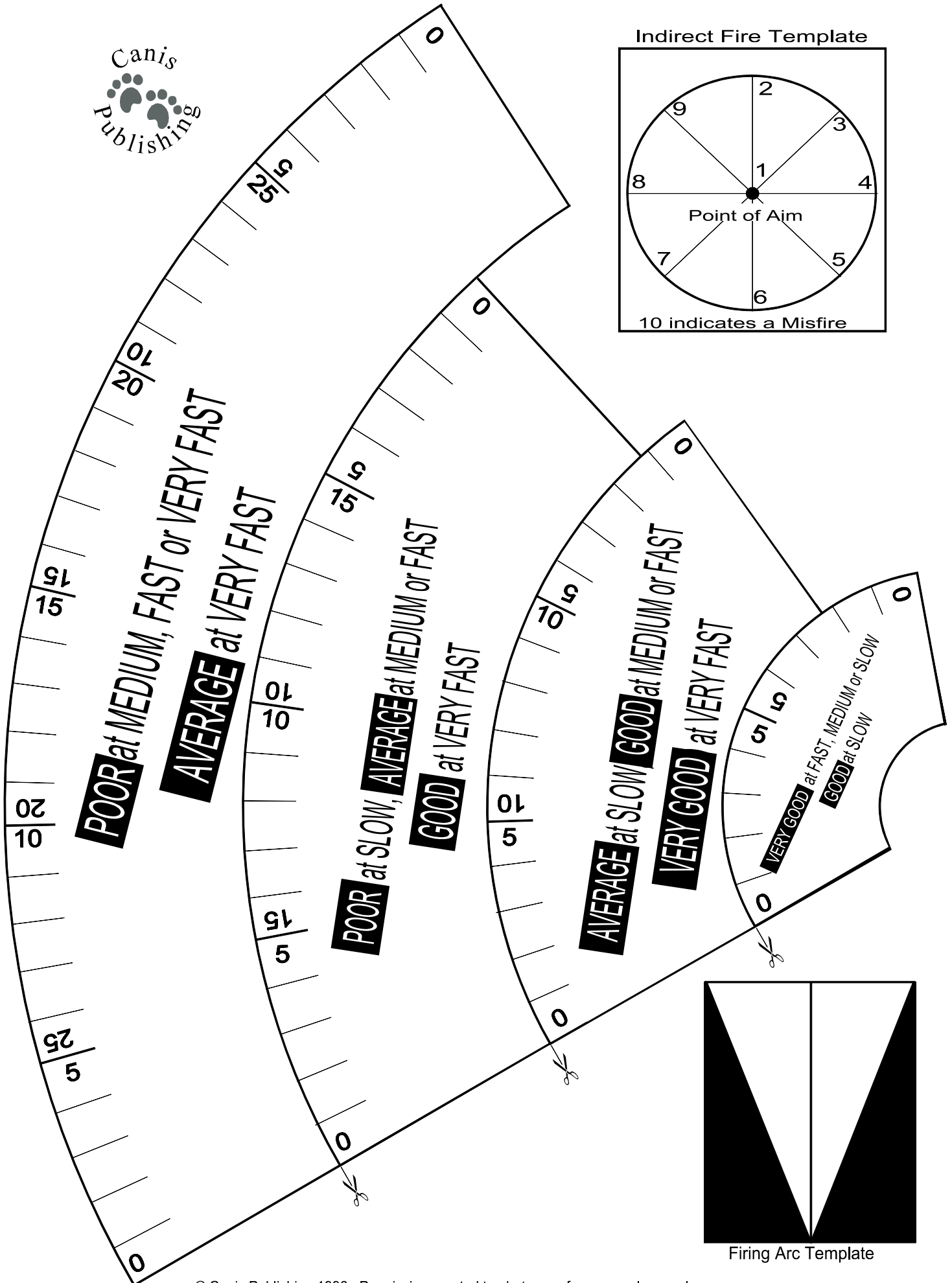
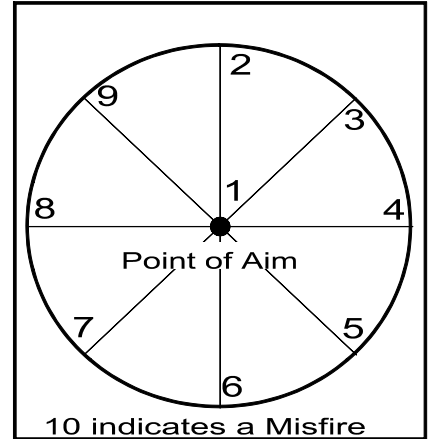


Table 31. Suppression Roll Target Number or less on d10 to Suppress

Suppression Points	Remaining FDP							
	1-20	21-50	51-75	76-100	101-150	151-200	201-500	501+
1-5	6	1	0	0	0	0	0	0
6-10	8	5	2	1	0	0	0	0
11-20	9	7	6	5	2	1	0	0
21-30	9	8	7	6	5	3	0	0
31-40	9	8	8	7	6	5	0	0
41-50	9	9	8	8	7	6	1	0
51+	9	9	8	8	7	6	1	1



Indirect Fire Template



Firing Arc Template